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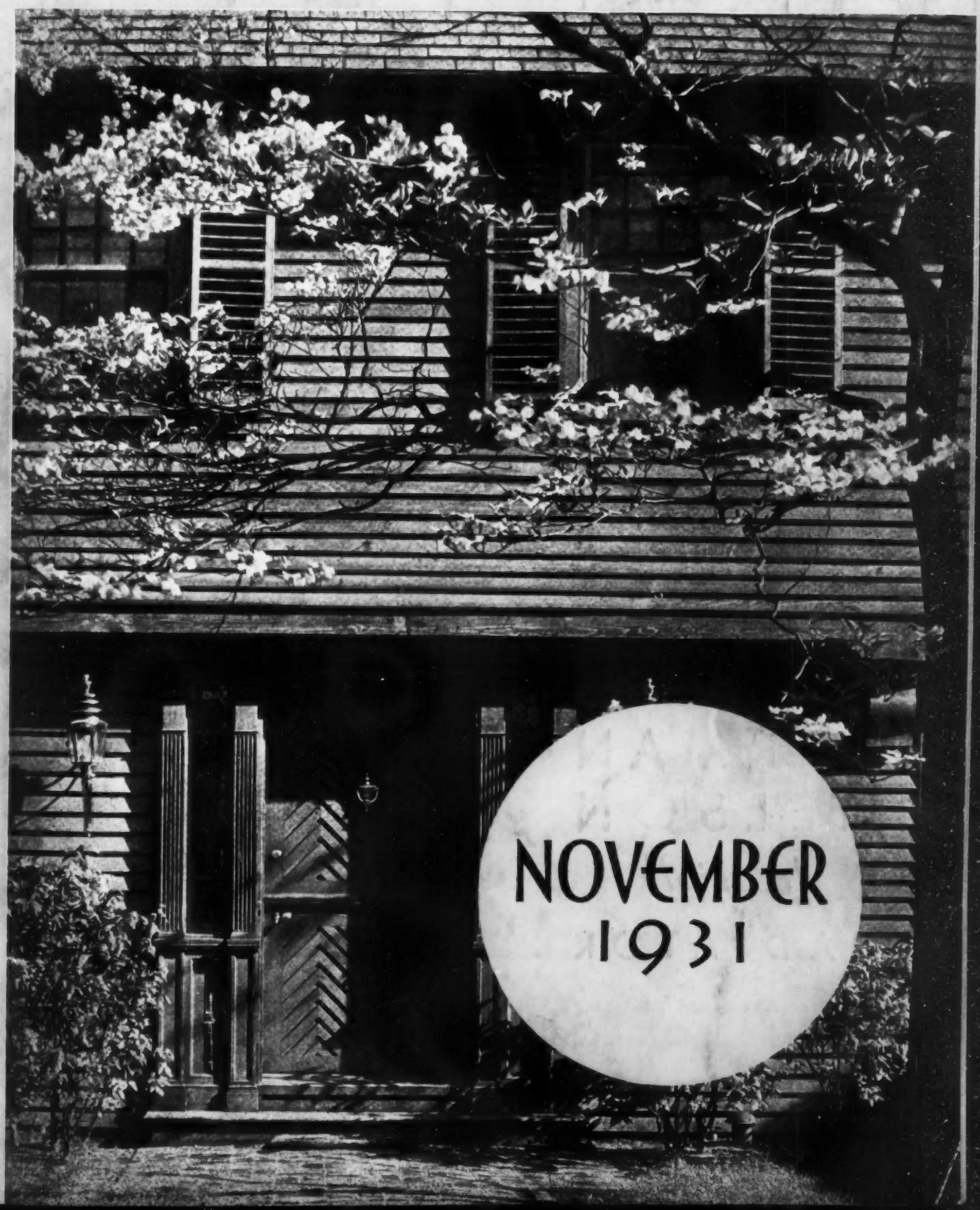
THE ARCHITECTURAL RECORD



NOVEMBER
1931

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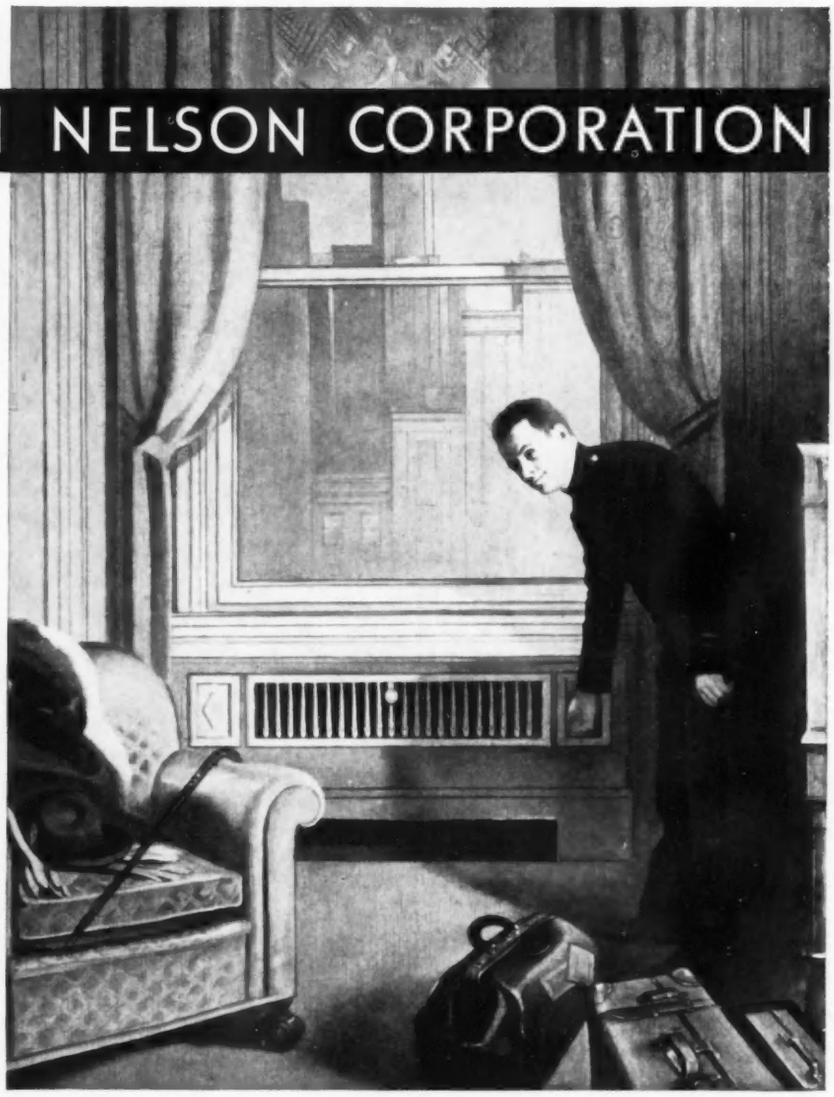

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VOL. 70 NO. 5 NOVEMBER, 1931

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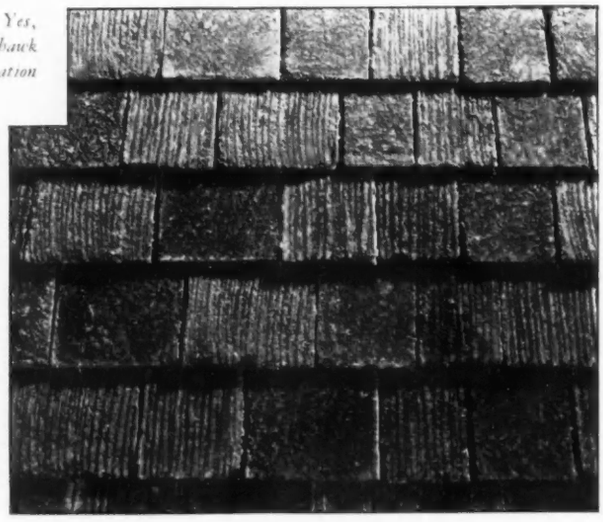

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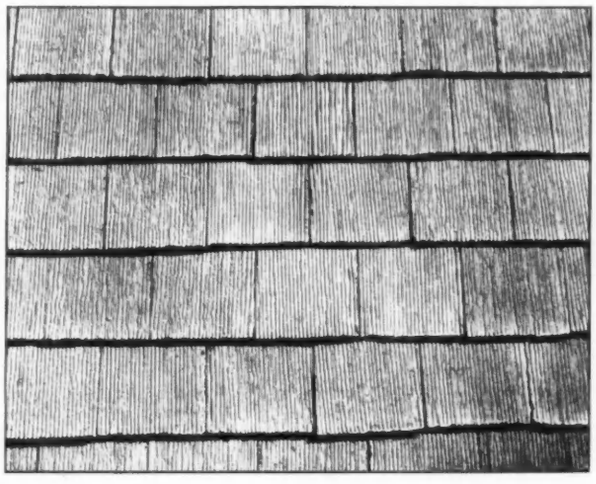

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ANNOUNCEMENTS

William Dewsnap, architect, announces his new address as 55 West 42nd Street, New York City.

Leo. J. Sharps, architect, has opened an office at 1412 Burlingame Avenue, Burlingame, California.

Raymond G. Johnson, architect, and George R. Otto, associate, have opened an office at 509-510 Ayers National Bank, Jacksonville, Illinois.

Harry M. Friedman, architect, announces that his new offices are now located in the Lawyers Building, 545 Broadway, Bayonne, New Jersey.

O'Neil Ford, architect, and Joe Linz, associate, have opened offices at 903 Southland Life Annex, Dallas, Texas.

The firm of Phoenix and Mangin, architects, has been dissolved. Thomas F. Mangin has retired. Harry D. Phoenix continues his practice of architecture at 607-8 S. A. and K. Building, Syracuse, N. Y.

PROVIDENCE ARCHITECTURAL CLUB

The second annual outing of the Providence Architectural Club was held September 12 at Pawtucket, R. I. Sports events, including a baseball game, featured the outing.

NEW YORK SOCIETY OF ARCHITECTS

The Junior League of the New York Society of Architects gave a smoker October 23 at the Hotel Astor.

PORTLAND CEMENT RESEARCH AT MELLON INSTITUTE

Dr. Edward R. Weidlein, director of the Mellon Institute of Industrial Research in Pittsburgh, announces the foundation of an Industrial Fellowship by the Green Bag Cement Company of Pittsburgh, subsidiary of the Davison Coke and Iron Company. The investigational work of this fellowship will be carried on by Raymond C. Briant, formerly with the U. S. Bureau of Standards.

PHILADELPHIA FEDERATION OF THE CONSTRUCTION INDUSTRY

Dr. Frank Parker, Professor of Finance of the Wharton School of Finance and Commerce, University of Pennsylvania, has been appointed Director of the Philadelphia Federation of the Construction Industry, a trade association described in the September issue of The Architectural Record, pages 153 and 154.

James W. Follen has been appointed engineer, and A. B. Randall research engineer, to make special studies of construction and economic analyses of building projects.

PRESERVATION OF MONUMENTS

The International Museum Office of the League of Nations has organized an international conference of experts to study problems relating to the preservation and protection of monuments of artistic and historical interest. The first meeting was held October 21-30, at Athens.

PRIZES OF ROME COMPETITION

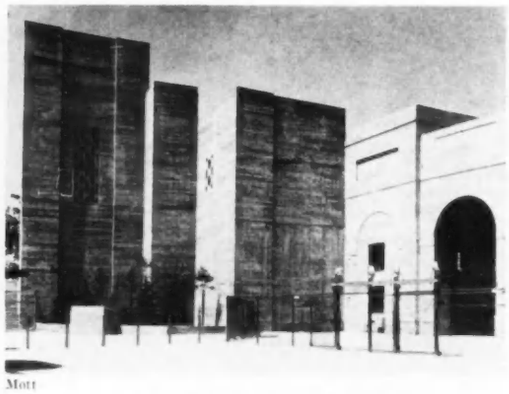
The American Academy in Rome announces its annual competitions for fellowships in architecture, landscape architecture, painting and sculpture.

The competitions are open to unmarried men not over 30 years of age who are citizens of the United States. The stipend of each fellowship is $1,500 a year with an allowance of $500 for transportation to and from Rome and an allowance of $150 to $300 for materials and incidental expenses. Residence and studio are provided without charge at the Academy, and the total estimated value of each fellowship is $2,500 a year. The term of each fellowship is two years in architecture and landscape architecture, three years in painting and sculpture.

Entries for competitions will be received until February 1, 1932. Circulars of information and application blanks may be obtained by addressing Roscoe Guernsey, Executive Secretary, American Academy in Rome, 101 Park Avenue, New York.

CALENDAR OF EVENTS

November	Exposition of Indian Tribal Arts, Grand Central Art Galleries.
November 5	"Elevators," by Bassett Jones of Meyer, Strong and Jones. "Air Conditioning or Manufactured Weather," by Mr. Lindsey or Mr. Keplinger of the Carrier Engineering Company. The New School for Social Research, New York.
November 12	"The Windowless Factory" (The Simmons Saw Company's Plant) and "The All-Glass Factory" (Proposed Building for the Toledo Scale Company), by W. J. Austin or J. K. Gannett of the Austin Company. The New School for Social Research, New York.
November 19	"The New York City Regional Plan," by Wayne D. Heydecker, secretary of the Regional Plan Association of New York. The New School for Social Research.
Until Dec.	Art Exhibition, Royal Society of Painters in Water Colours, London (5a, Pall Mall East).
December 1	Closing date for entries in 1931 Better Homes in America Competition. Address Better Homes in America, 1653 Pennsylvania Avenue, Washington, D. C.
December 1	Closing date of competition for monument to the First Permanent Settlement of the West at Harrodsburg, Kentucky. Address the Quartermaster General, Munitions Building, Washington, D. C.
Dec. 1-15	The 34th Architectural Exhibition, conducted jointly by the Philadelphia Chapter of the American Institute of Architects and the T-Square Club. The Exhibition will be held in the Architects Building, Philadelphia.
	"Radio City," by Raymond Hood, one of its architects. The New School for Social Research, New York.
December 10	"Port Authority Planning," a lecture at the New School for Social Research, New York.
December 17	"Village and Town Planning," a lecture at the New School for Social Research, New York.
1932	
January 7	"County and Parkway Planning," by Major Gilmore Clarke of the Westchester County Parkway Commission. The New School for Social Research, New York.
January 14	"Cheap Housing and Slum Elimination," a symposium at the New School for Social Research, New York.
January 20	"George Washington Bridge," a lecture at the New School for Social Research, New York.
Jan. 25-29	Second International Heating and Ventilating Exposition, Cleveland. In conjunction with annual meeting of American Society of Heating and Ventilating Engineers.
February 1	Closing date for entries in the annual Prizes of Rome competition. Address Roscoe Guernsey, Secretary, American Academy in Rome, 101 Park Avenue, New York City.
October	International Congress for Modern Architecture at Moscow, U.S.S.R. Program: "The Functional City."
1933	
October	"A Century of Progress," International Exposition at Chicago.
	International Congress for Modern Architecture, to be held in Chicago in conjunction with the World's Fair.



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GEORGE G. ELMSLIE, ARCHITECT

THE DECEMBER ISSUE

GROUP DESIGN OF HOUSING

An article by Henry Wright setting forth data developed by the Committee of the President's Conference on housing design. The article will deal with building costs and site planning, grouping of single houses, row housing and entire developments.

THE LOS ANGELES COLISEUM

This stadium was designed by John and Donald B. Parkinson, architects, primarily to care for the 1932 Olympic games. It is one of the largest and most complete structures of its kind in the world, caring for all kinds of athletics, pageants and large spectacular entertainments.

PORTFOLIO OF SCHOOLS

Grade and high schools are being built while other buildings await a more favorable time. A group of important school buildings recently completed has been selected for illustration:

1. Avery Coonley School, Downers Grove, Ill., by Waldron Faulkner, architect, designed for ease of circulation and an abundance of light.
2. Orchard School, Indianapolis, by Walter Dorwin Teague, designer, outstanding for its educational efficiency, structural economy and architectural simplicity.
3. School of Educational Research, New York City, by Page and Vogelgesang, interior architects, a cooperative school for student-teachers with classrooms in a made-over building.
4. A group of administration, classroom and dormitory buildings for the Pennsylvania State College, designed by Charles Z. Klauder, architect.

DIMENSIONS

A study of sizes of basic elements in buildings and their relation to working and living areas. Elevators, theater seats, door openings and other items which the architect and draftsmen need to know in daily practice are conveniently grouped together and analyzed.

RECENT SCIENTIFIC DISCOVERIES APPLICABLE TO BUILDINGS

A Technical News and Research summary of the practical applications of recent developments in science and technology and a review of the more important activities under way in research laboratories, which are significant to the building industry. The summary will include these topics: communication, power generation and transmission, handling of materials, standardization, new lightweight materials and construction, utilization of waste, elimination of dirt and noise, automatic control and motor operation of building parts.

OTHER FEATURES—

These will include a church at Western Springs, Ill., by George G. Elmslie, architect; a summer cottage at Gibson Island, Md., by Alexander B. Trowbridge, architect; a library in Lake Forest, Ill., by Edwin H. Clark, architect; a recreation building in Cincinnati by Fechheimer and Ihorst, architects; a small office building in Los Angeles by John and Donald B. Parkinson, architects; and the Book Review, News in Brief and Building Trends departments.

With All Your Building —Build Reputation

EVEN in these days of frantic striving for low first cost, regardless of ultimate economy, the opportunity comes to every Architect, Engineer and Contractor, to create that outstanding monument to his skill for which all those other jobs have seemed but a preparation.

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DOUGLAS HULL McLELLAN, ARCHITECT

THE ARCHITECTURAL RECORD NOVEMBER, 1931
VOL. 70—No. 5

COORDINATED LEADERSHIP FOR THE BUILDING INDUSTRY

By MICHAEL A. MIKKELSEN

Robert D. Kohn, president of the American Institute of Architects, in the September number of *The Octagon*, the journal of the Institute, makes an announcement that will be gratefully received by all who are in any way connected with the building industry or who understand how important coordinated leadership of that industry is to the economic welfare of the country. It is to the effect that an organization is to be set up through which existing national associations may collaborate on matters of common interest.

At a conference on September 23 and 24 in Washington, at the headquarters of the Institute, delegates from nineteen associations unanimously agreed to recommend to their respective organizations that they join in the formation of a league to exchange information, send delegates to stated meetings and act in unison on problems of general interest.

As the proposal submitted by the Institute is merely to provide an instrument of cooperation for associations already in existence, with no financial commitments, the conference resolved itself into a provisional organization known as the Construction League of the United States, with the following officers:

General Chairman (Two Years)
Robert D. Kohn (President, American Institute of Architects).
First Vice-Chairman (One Year)
Francis L. Stuart (President, American Society of Civil Engineers).
Second Vice-Chairman (Two Years)
A. P. Greensfelder (President, Associated General Contractors of America).
Treasurer (Two Years)
H. H. Sherman (President, The Producers' Council).
General Secretary (One Year)
P. M. Donoghue (National President, National Association of Master Plumbers of the United States).
Joint Secretariat
E. J. Harding, Managing Director, Associated General Contractors.
E. C. Kemper, Executive Secretary, American Institute of Architects.
L. W. Wallace, Executive Secretary, American Engineering Council.

CHARTER ASSOCIATIONS REPRESENTED AT THE CONSTRUCTION LEAGUE CONFERENCE

American Engineering Council
American Federation of Labor, Building Department
National Association of Builders' Exchanges
National Association of Building Trades Employers
American Institute of Architects
American Institute of Steel Construction
Associated General Contractors of America
Contracting Plasterers' International Association
Electrical Guild of America
Heating and Piping Contractors National Association
International Cut Stone Contractors' and Quarrymens' Association
International Society of Master Painters and Decorators
National Association of Marble Dealers
National Association of Master Plumbers of the United States
National Association of Ornamental Iron and Bronze Manufacturers
National Association of Sheet Metal Contractors
National Committee of Building Congresses
The Producers' Council
The United Association of Journeymen Plumbers and Steam Fitters

Work of the Construction League

It was suggested that much of the work of the League could be done through a committee of the executive secretaries of the constituent associations. However, details of organization and procedure were left for future consideration. One item definitely agreed on is that there are to be periodic conferences of the officers of the member associations.

The general aim of the League is set forth in this excerpt from Mr. Kohn's statement:

"Little by little each group will find itself depending on the others for criticism of methods and aims and for support for those of its purposes which meet with the others' approval. And to secure such approval these purposes cannot be selfish. They must be oriented towards eventual benefit to the public at large. In other words, this league or cooperative group will be the exchange in which there will be created an industrial public opinion based on real worth. The immediate problem is to get each of the twenty-five or thirty national organizations of the building industry to agree formally to join with the Institute of Architects in this experiment. . .

"A call to the architects for leadership has now been sounded by the building industry as never before. The speakers at this meeting at The Octagon echoed it time after time. The Associations mentioned in the list of those who participated all agreed to this need. Will we Architects meet the challenge?"

When Mr. Kohn speaks of "twenty-five or thirty national organizations," he no doubt has in mind the fact that the exact number eligible for membership depends upon policy with respect to activities of the League rather than upon a literal definition of the term "building industry." As none of the associations invited to send delegates to the conference declined, and as the delegates unanimously agreed that the plan of cooperation proposed by the Institute is desirable and practical, there is reason to believe that the League will presently embrace all national organizations that can work together effectively.

It is significant that the Institute is receiving so cordial a support for its effort to bring about collaboration by national associations when earlier efforts by other organizations have failed. Mr. Kohn says: "The one note that was constantly sounded throughout the two days of meeting was that the industry as a whole was ready to follow the leadership of the professional men"; but all who have been in touch with Mr. Kohn's activities in the past know that this readiness is largely a tribute to his own experience and personality.

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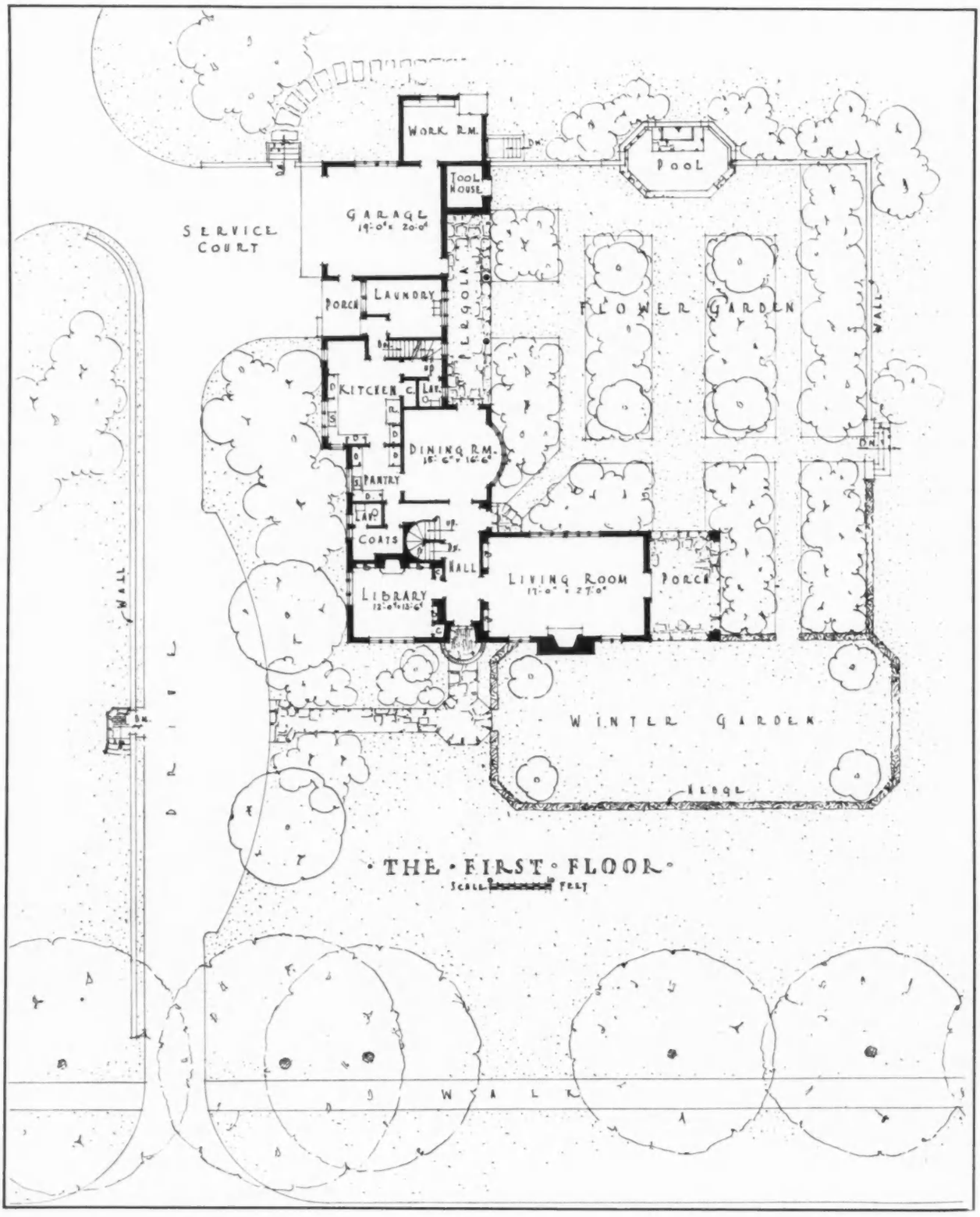
PORTFOLIO OF COUNTRY HOUSES

NOVEMBER
1931

The cost, color scheme, materials and construction of each house illustrated in this Portfolio are described on pages 370 to 372



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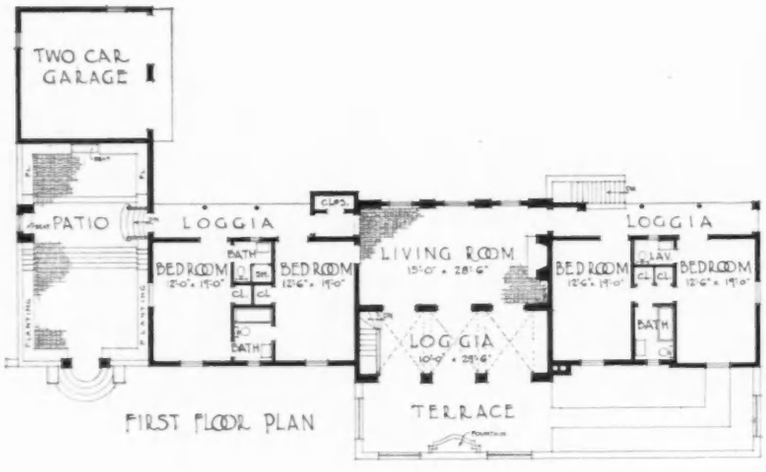
GLENS FALLS, NEW YORK
GODWIN, THOMPSON AND PATTERSON, ARCHITECTS

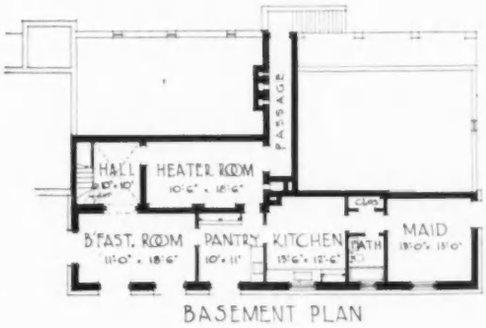
Tebbs and Knell

HOUSE OF DR. A. M. BILLSTEIN
MOUNTAIN LAKE, FLORIDA
FRANKLIN ABBOTT, ARCHITECT

Tebbs and Knell

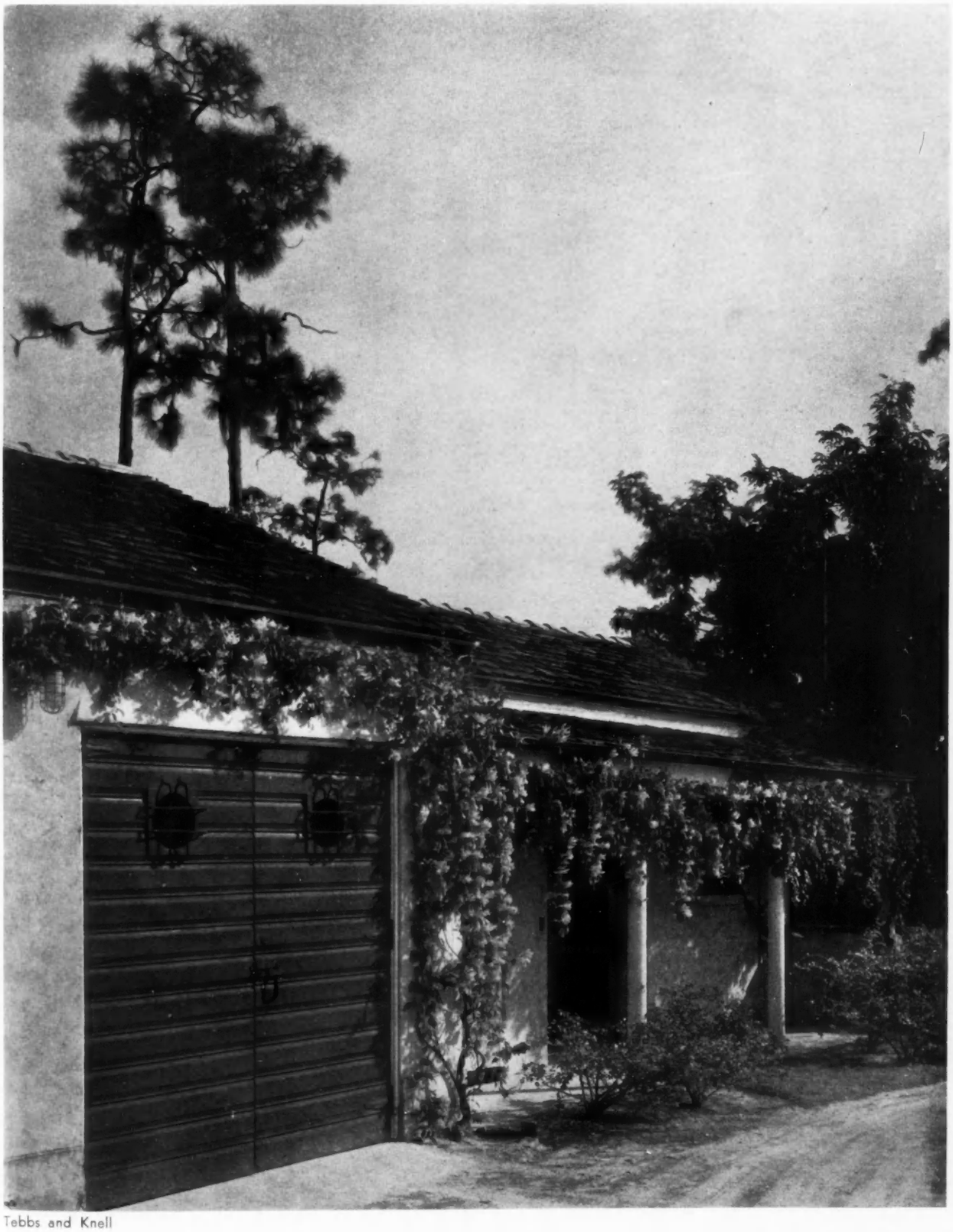


FIRST FLOOR PLAN



BASEMENT PLAN

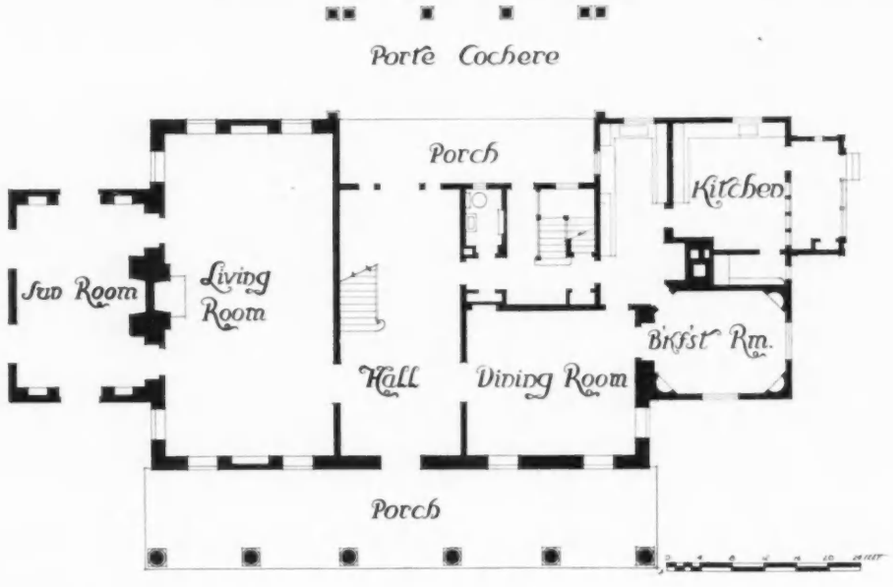
HOUSE OF DR. A. M. BILLSTEIN
MOUNTAIN LAKE, FLORIDA
FRANKLIN ABBOTT, ARCHITECT



Tebbs and Knell

HOUSE OF DR. A. M. BILLSTEIN
MOUNTAIN LAKE, FLORIDA
FRANKLIN ABBOTT, ARCHITECT

Poland

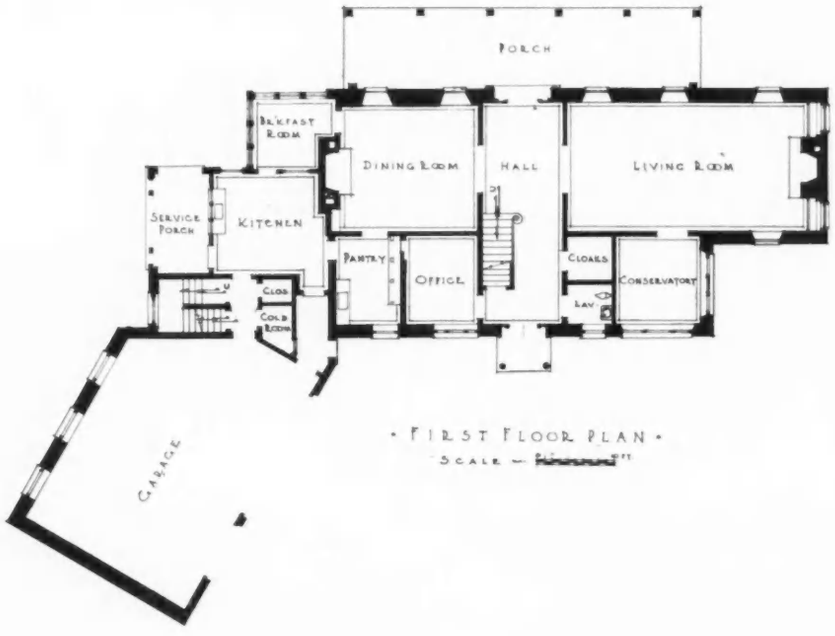


HOUSE OF W. E. NICKEY, MEMPHIS, TENN.
JONES, FURBRINGER AND JONES, ARCHITECTS
DENAUX, INTERIOR DECORATOR

Poland

HOUSE OF W. E. NICKEY, MEMPHIS, TENN.
JONES, FURBRINGER AND JONES, ARCHITECTS
W. C. LESTER, LANDSCAPE ARCHITECT

Sanborn Studio

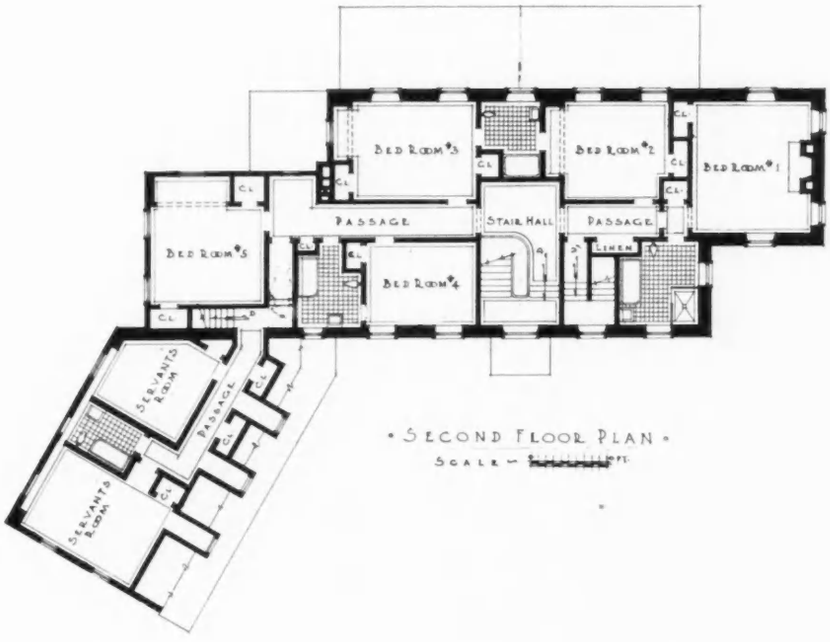


• FIRST FLOOR PLAN •

SCALE — 1/8" = 1'-0"

HOUSE OF MALCOLM FARQUHAR
KENNETT SQUARE, PENNSYLVANIA
E. WILLIAM MARTIN, ARCHITECT

Sanborn Studio

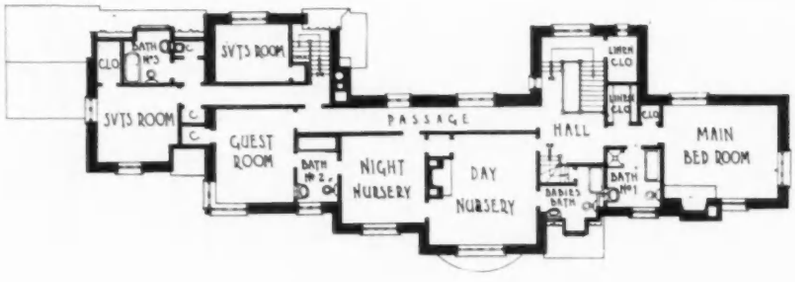


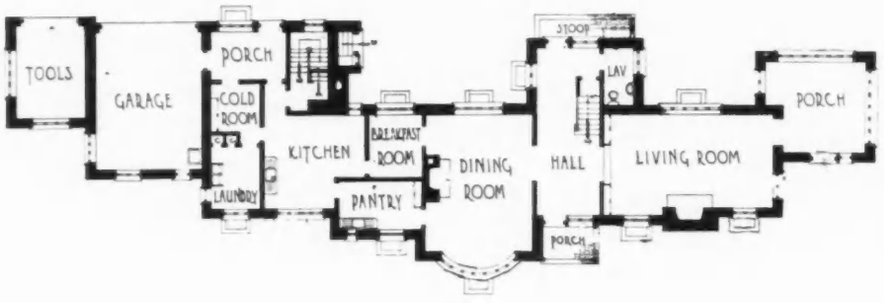
• SECOND FLOOR PLAN •

SCALE — [illegible]

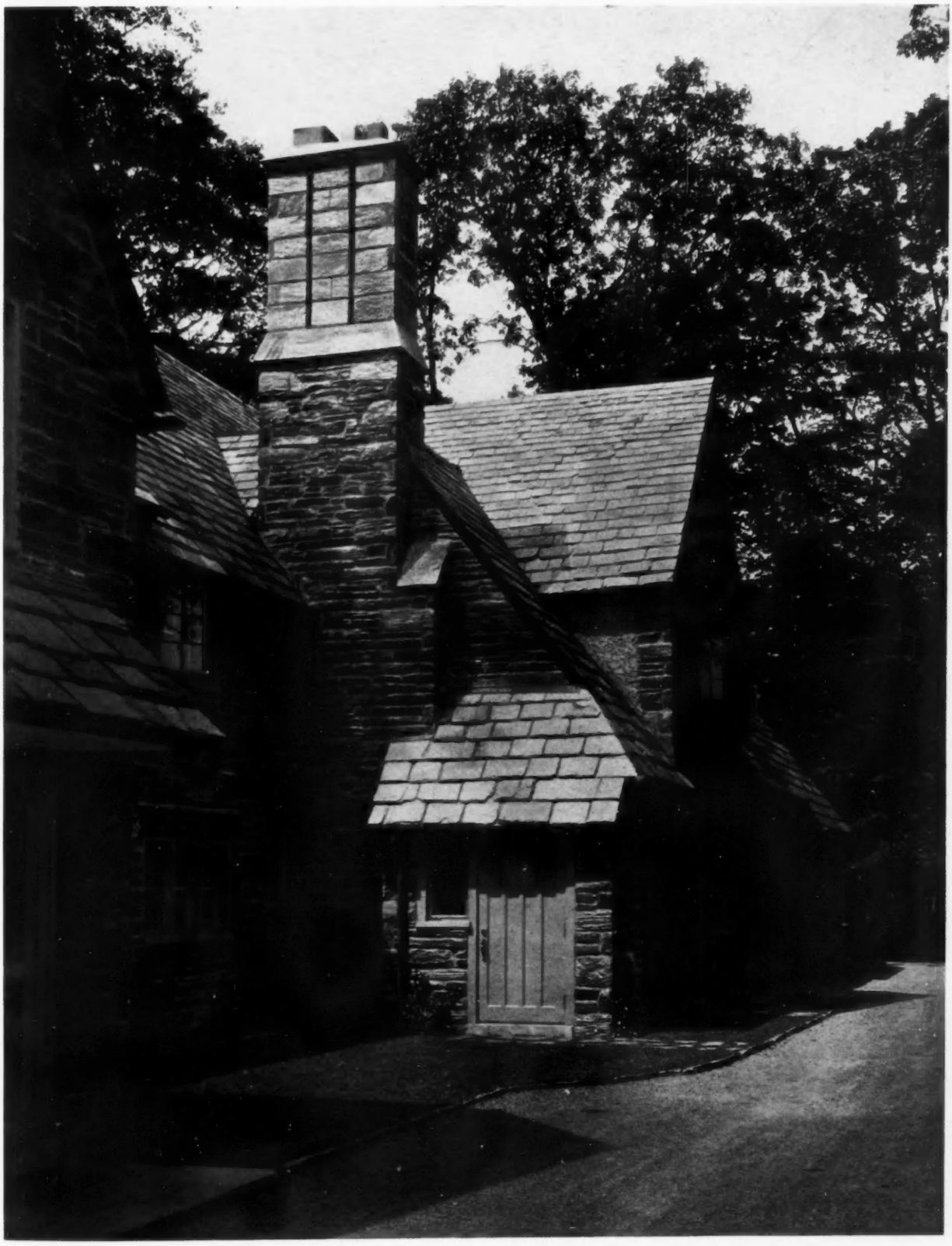
HOUSE OF MALCOLM FARQUHAR
KENNETT SQUARE, PENNSYLVANIA
E. WILLIAM MARTIN, ARCHITECT

Wallace



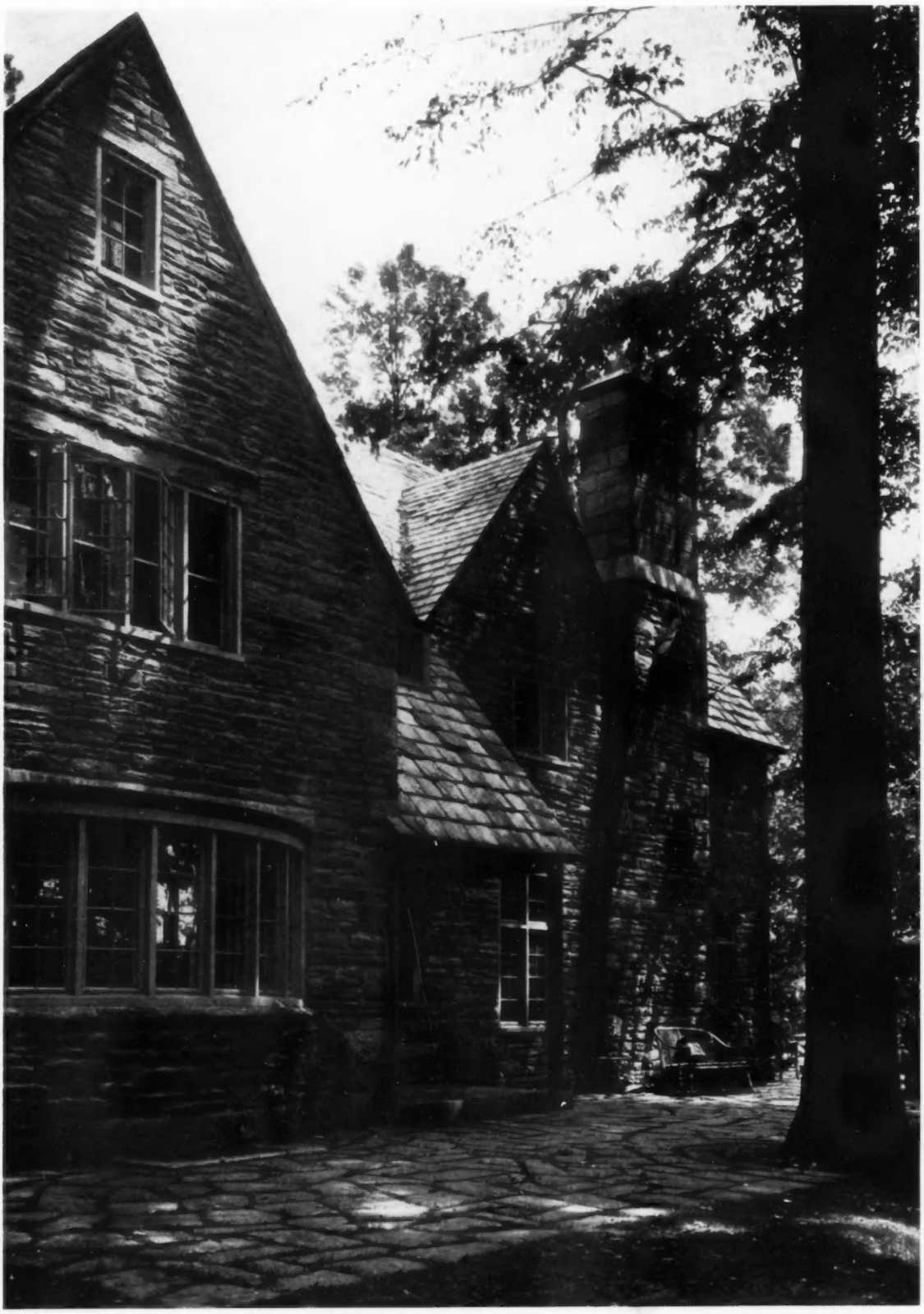


HOUSE OF N. PAUL KENWORTHY
MEADOWBROOK, PENNSYLVANIA
CARL A. ZIEGLER, ARCHITECT



Wallace

HOUSE OF N. PAUL KENWORTHY
MEADOWBROOK, PENNSYLVANIA
CARL A. ZIEGLER, ARCHITECT



Wallace

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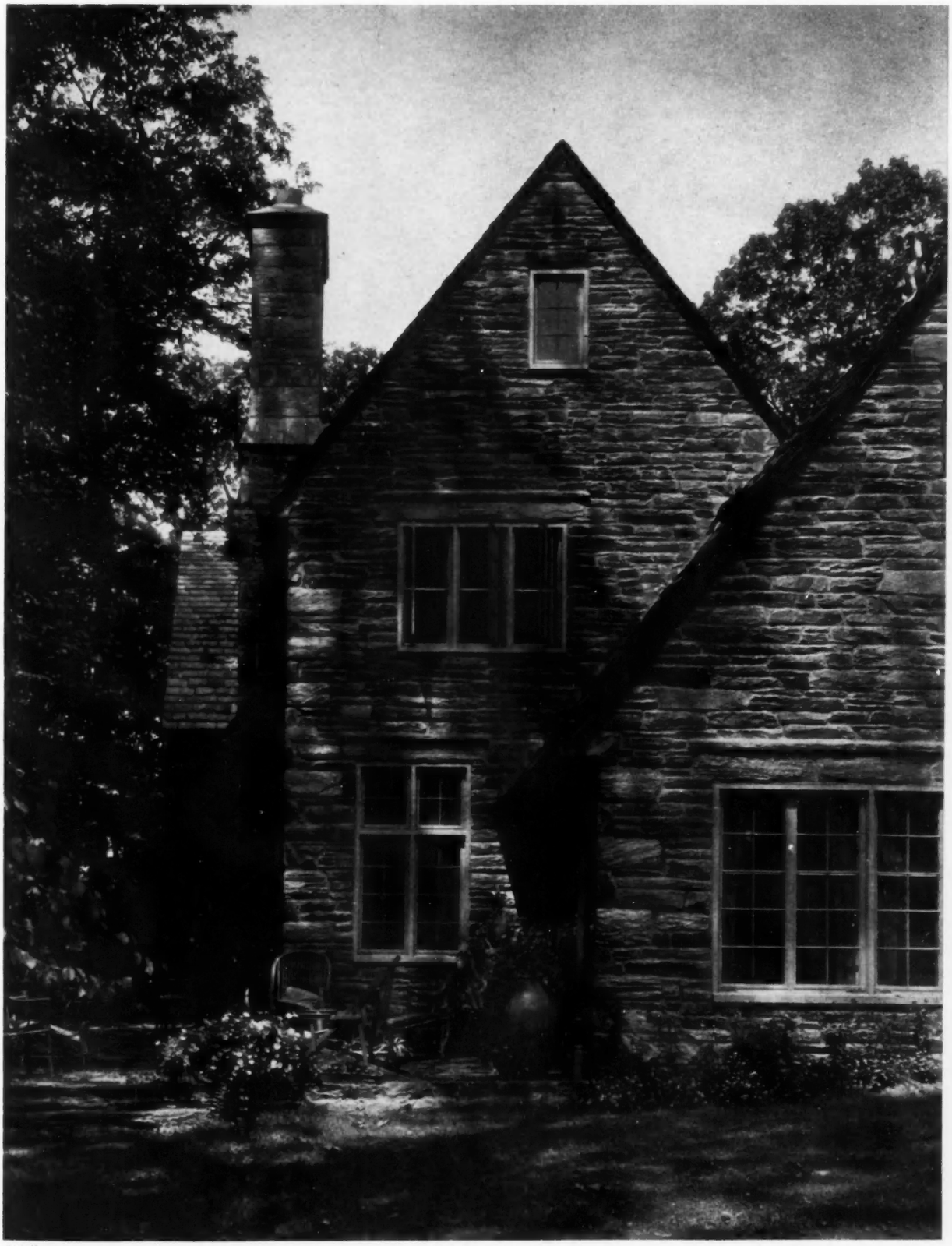
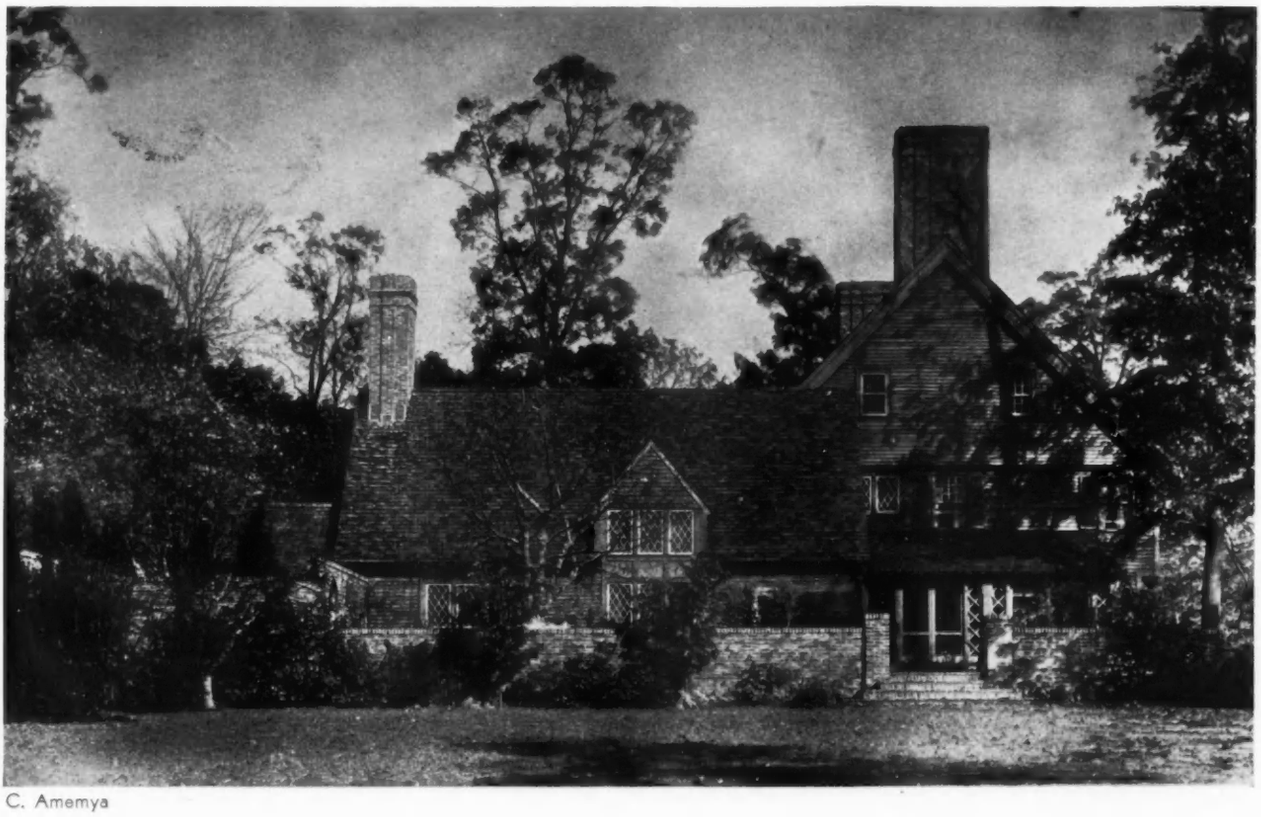
MEADOWBROOK, PENNSYLVANIA
CARL A. ZIEGLER, ARCHITECT

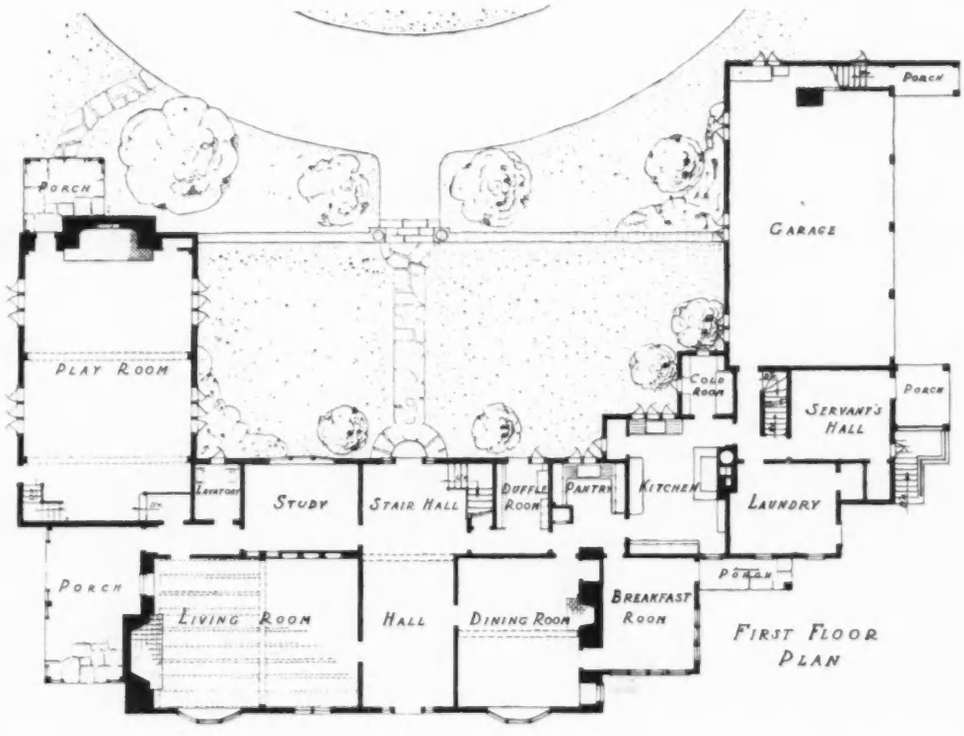


Wallace

HOUSE OF N. PAUL KENWORTHY
MEADOWBROOK, PENNSYLVANIA
CARL A. ZIEGLER, ARCHITECT



C. Amemya

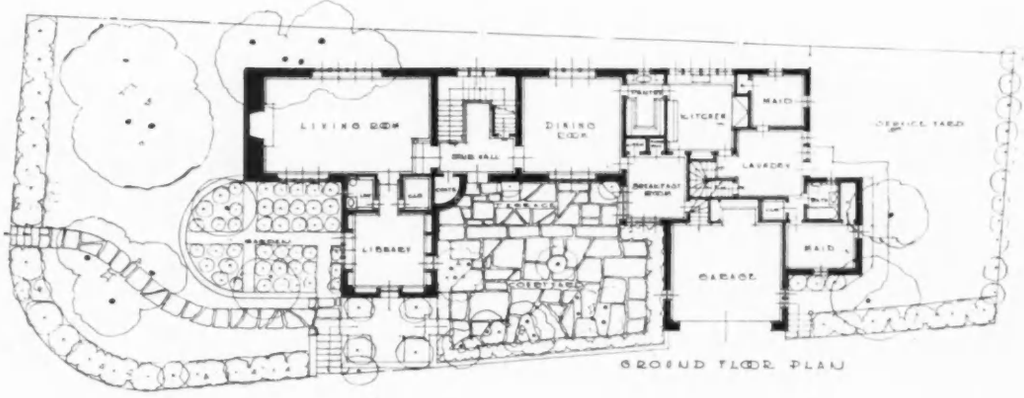


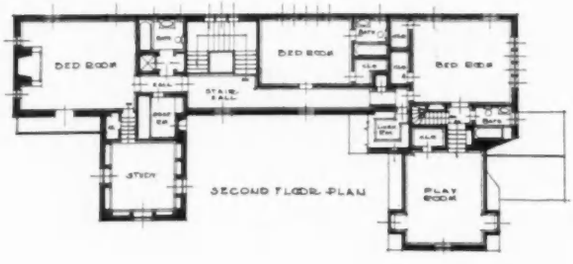
HOUSE OF L. MARTIN RICHMOND
GLEN HEAD, LONG ISLAND
ROGER H. BULLARD, ARCHITECT

Clarke

HOUSE OF N. Y. STOCKWELL
LOS ANGELES, CALIFORNIA
RALPH C. FLEWELLING, ARCHITECT

Clarke



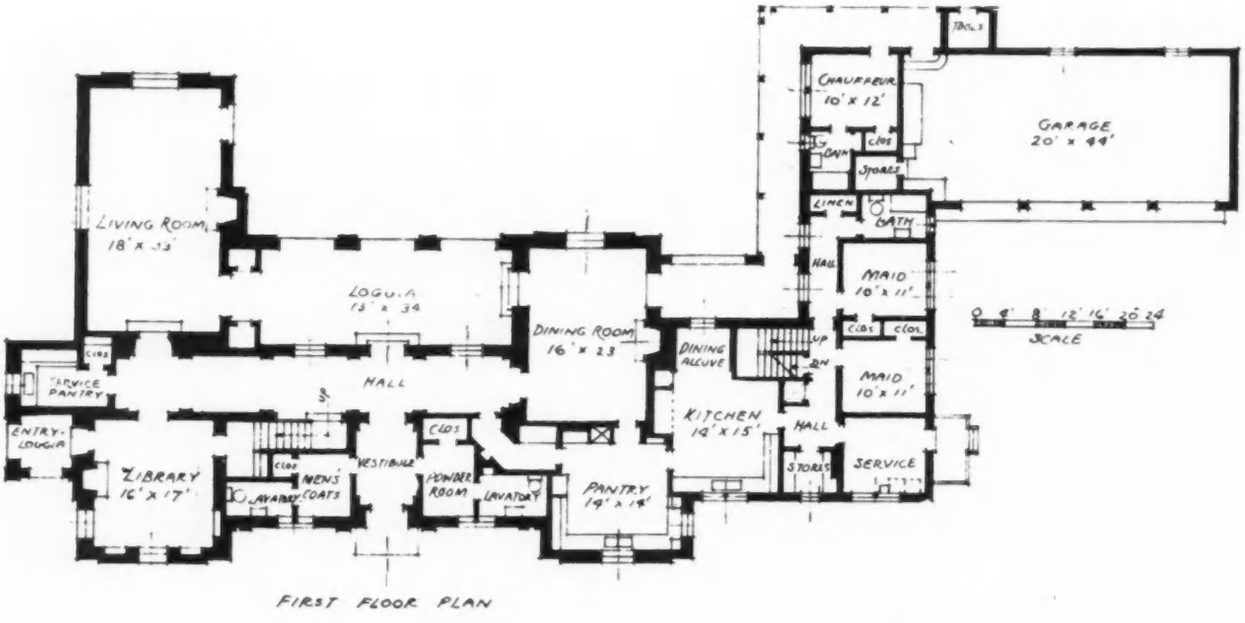


HOUSE OF N. Y. STOCKWELL
LOS ANGELES, CALIFORNIA
RALPH C. FLEWELLING, ARCHITECT

Clarke

HOUSE OF N. Y. STOCKWELL
LOS ANGELES, CALIFORNIA
RALPH C. FLEWELLING, ARCHITECT

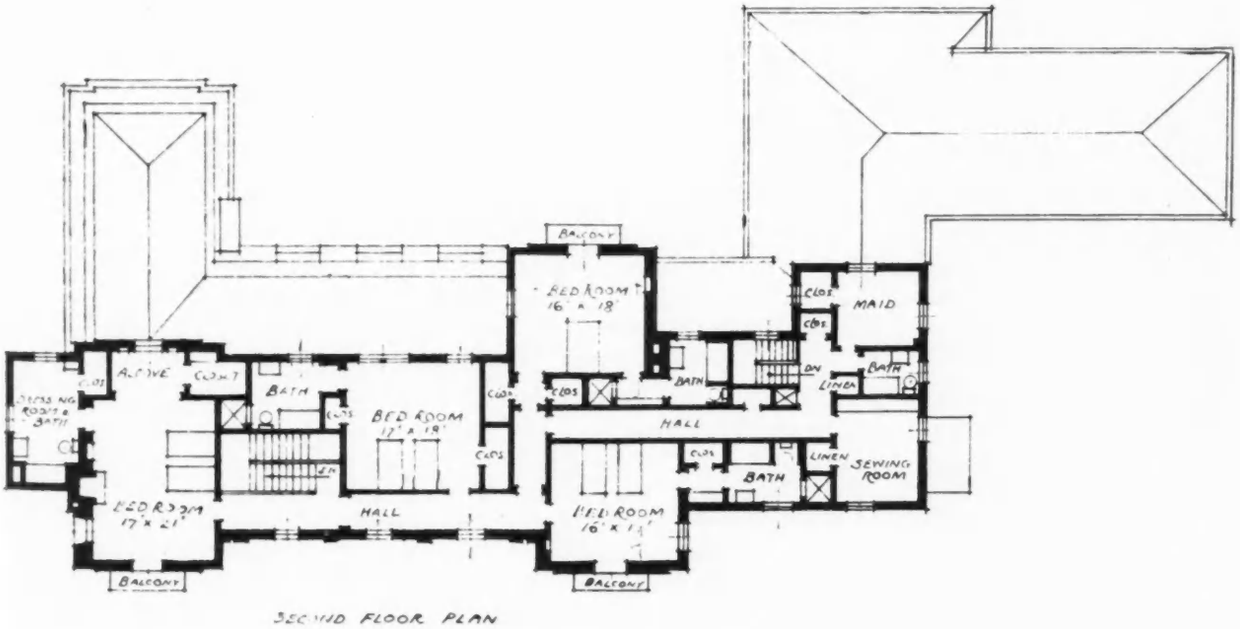
Haight



FIRST FLOOR PLAN

HOUSE OF LESTER G. BALDWIN
PASADENA, CALIFORNIA
REGINALD D. JOHNSON, ARCHITECT

Haight



SECOND FLOOR PLAN

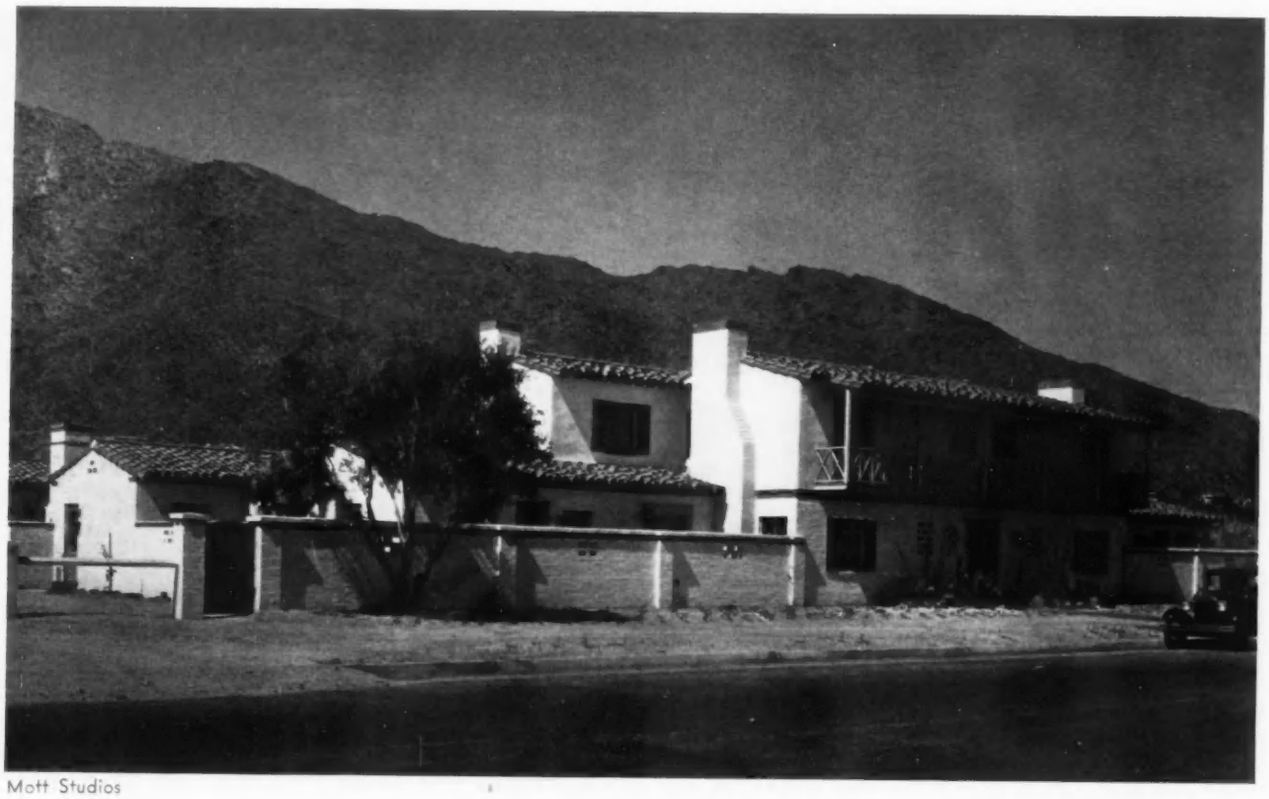
HOUSE OF LESTER G. BALDWIN
PASADENA, CALIFORNIA
REGINALD D. JOHNSON, ARCHITECT

Haight

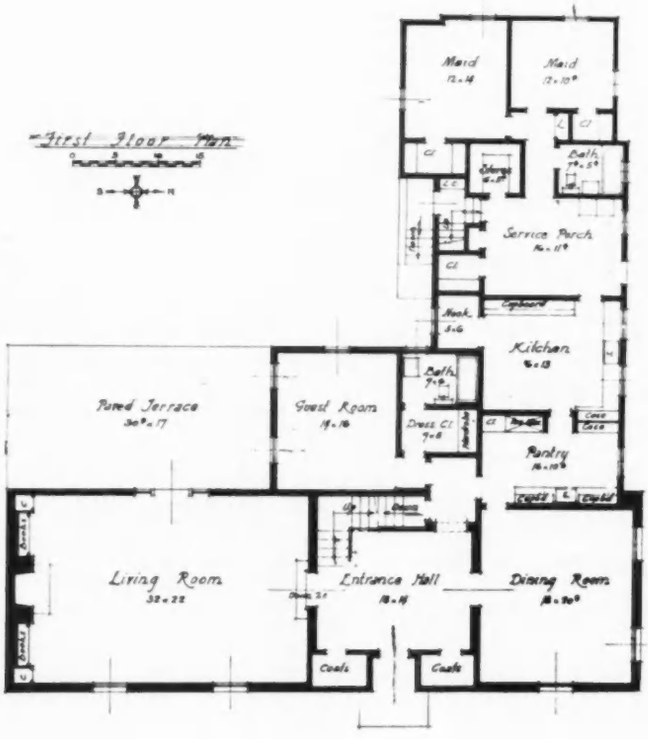
HOUSE OF LESTER G. BALDWIN
PASADENA, CALIFORNIA
REGINALD D. JOHNSON, ARCHITECT

Mott Studios

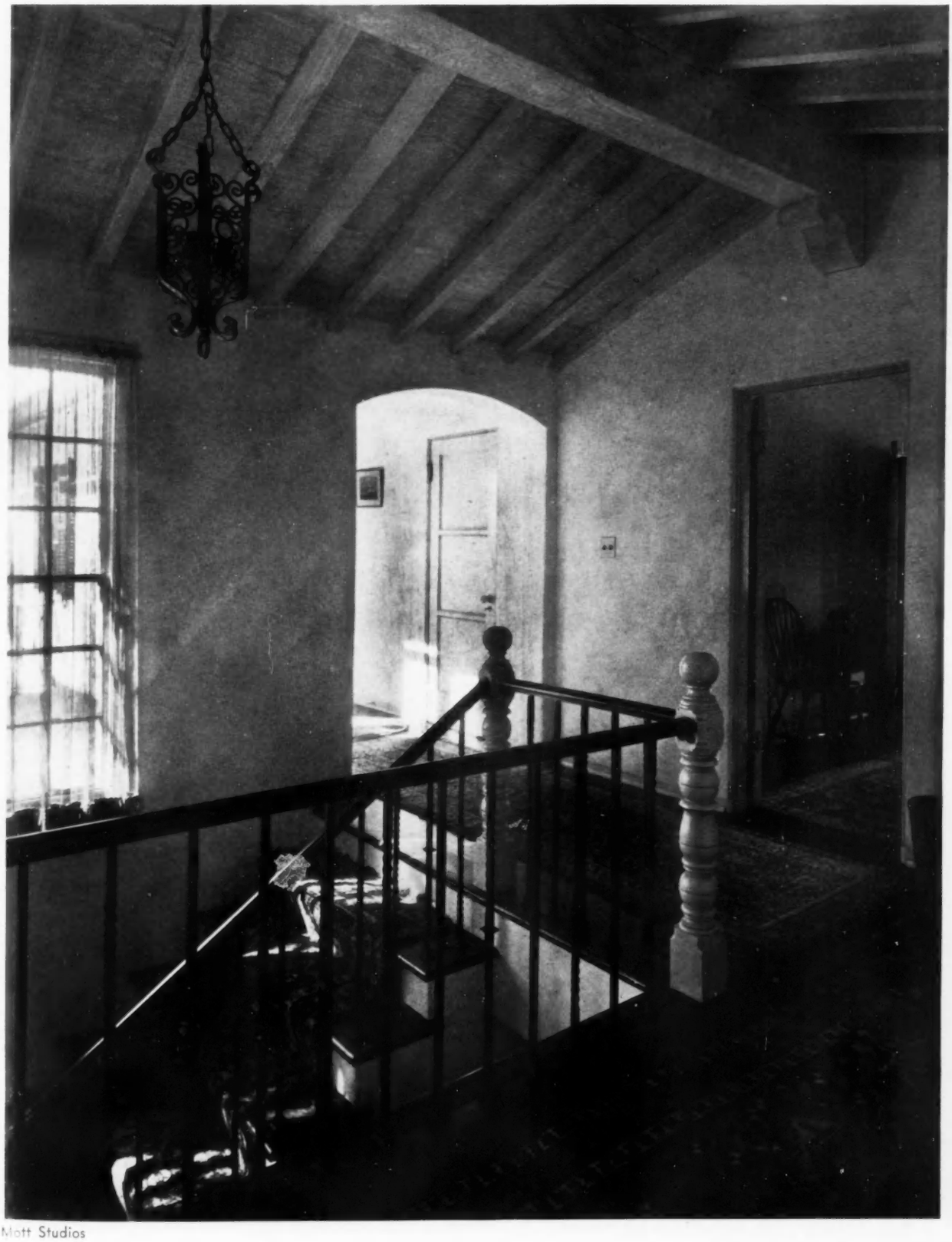
HOUSE OF MRS. KATE M. GREPPIN
LOS ANGELES, CALIFORNIA
MARSHALL P. WILKINSON, BUILDER



Mott Studios



HOUSE OF MRS. KATE M. GREPPIN
LOS ANGELES, CALIFORNIA
MARSHALL P. WILKINSON, BUILDER



Mott Studios

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MARSHALL P. WILKINSON, BUILDER

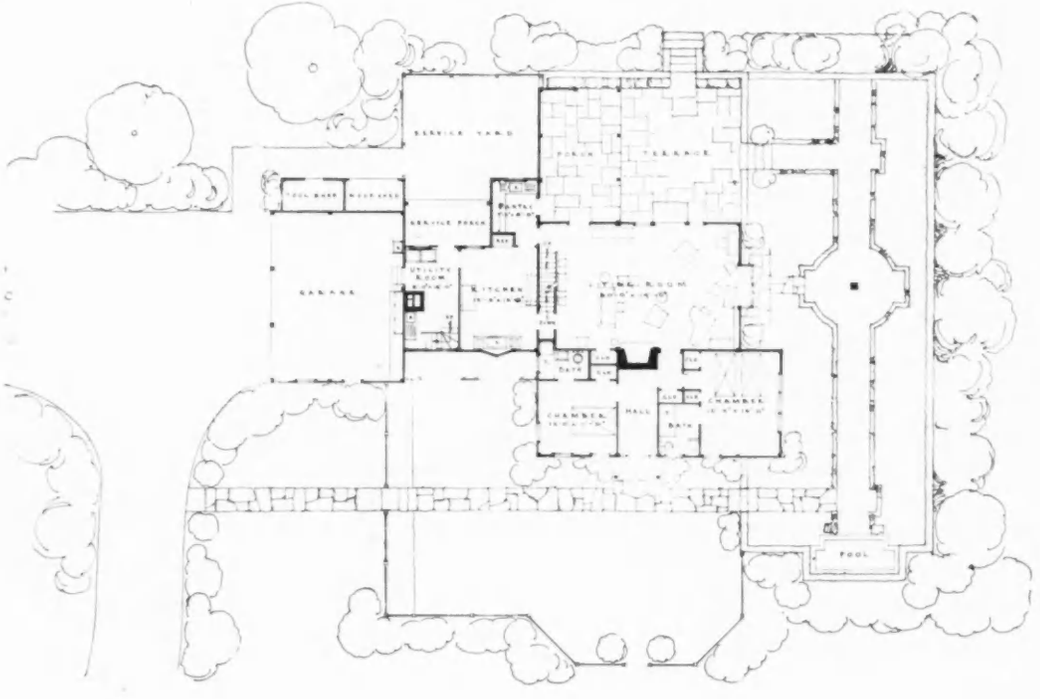
Mott Studios

HOUSE OF MRS. KATE M. GREPPIN
LOS ANGELES, CALIFORNIA
MARSHALL P. WILKINSON, BUILDER

Van Anda

HOUSE OF ROGER S. SPERRY
MIDDLEBURY, CONNECTICUT
CAMERON CLARK, ARCHITECT

Van Anda



HOUSE OF ROGER S. SPERRY
MIDDLEBURY, CONNECTICUT
CAMERON CLARK, ARCHITECT

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MIDDLEBURY, CONNECTICUT
CAMERON CLARK, ARCHITECT

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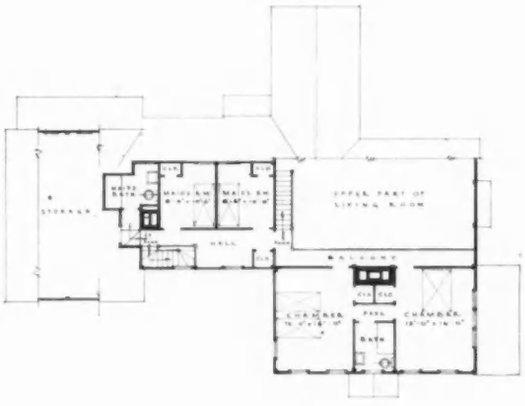

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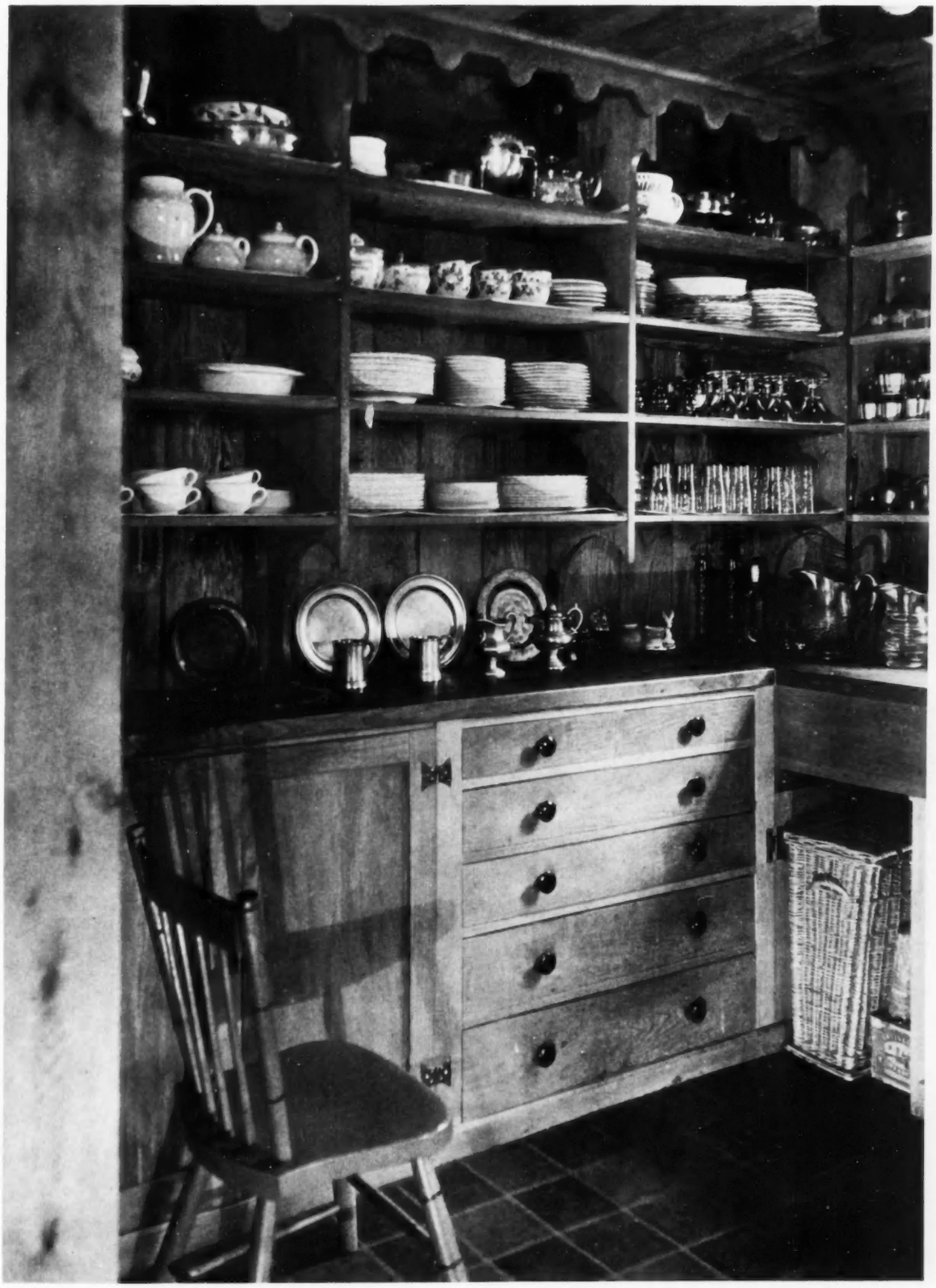
MIDDLEBURY, CONNECTICUT
CAMERON CLARK, ARCHITECT



Van Anda

HOUSE OF ROGER S. SPERRY
MIDDLEBURY, CONNECTICUT
CAMERON CLARK, ARCHITECT

Haight

HOUSE OF JAMES P. MACKEL
GAINSBOROUGH HEATH, SAN MARINO, CALIF.
DOUGLAS H. McLELLAN, ARCHITECT

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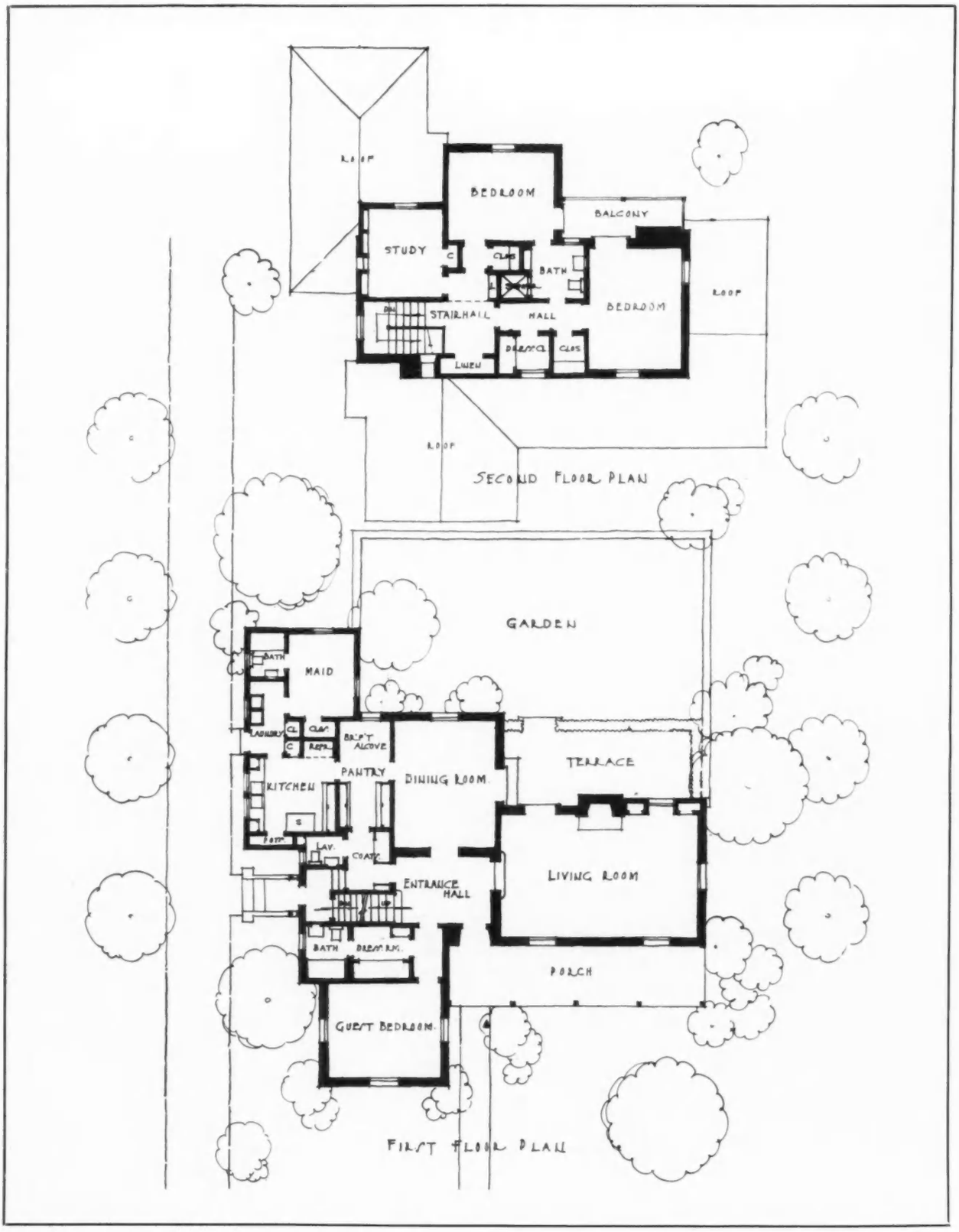
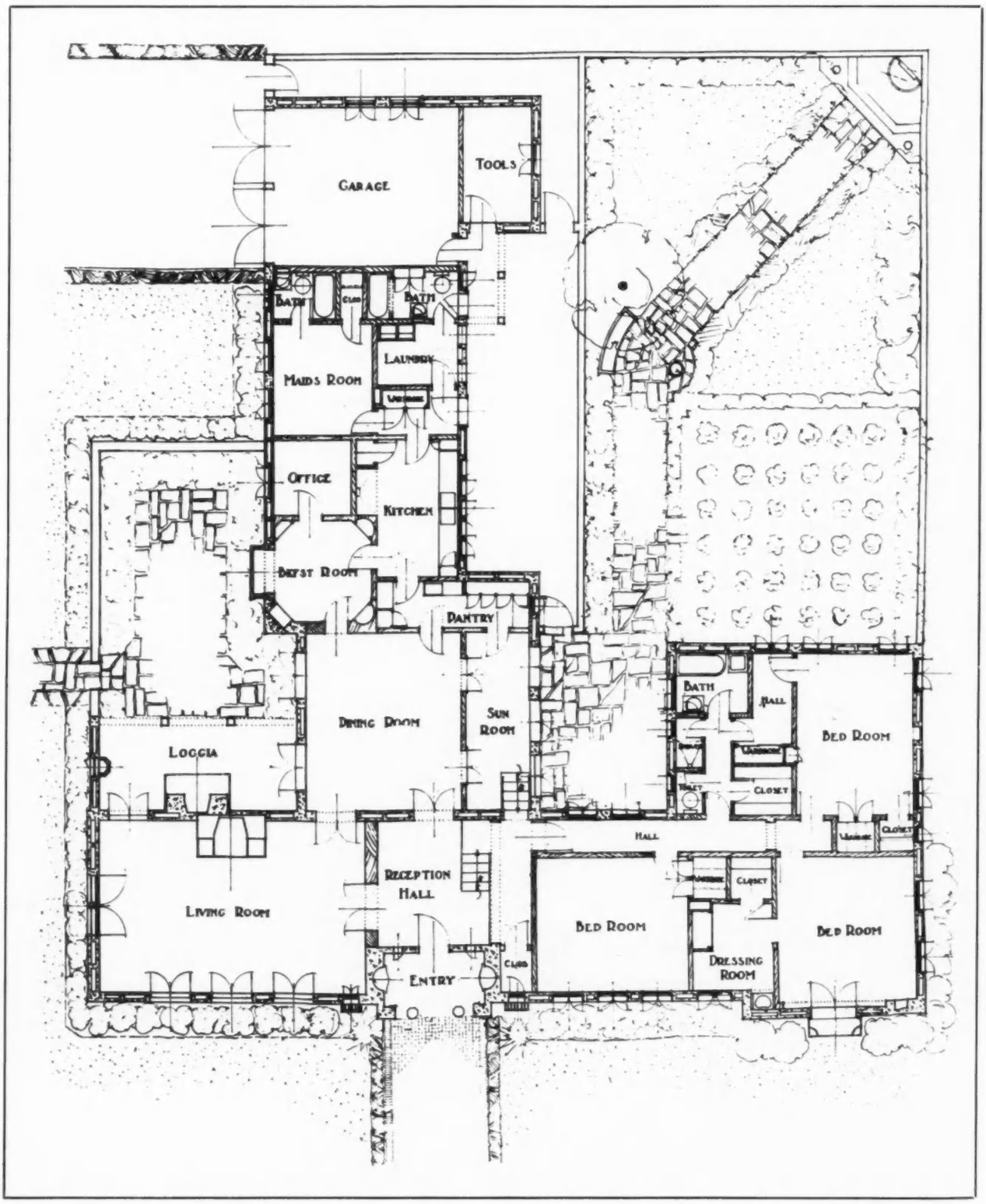


HOUSE OF JAMES P. MACKEL
GAINSBOROUGH HEATH, SAN MARINO, CALIF.
DOUGLAS H. McLELLAN, ARCHITECT

HOUSE OF JOHN WAGNER
LOS ANGELES, CALIFORNIA
H. C. NEWTON AND R. D. MURRAY, ARCHITECTS

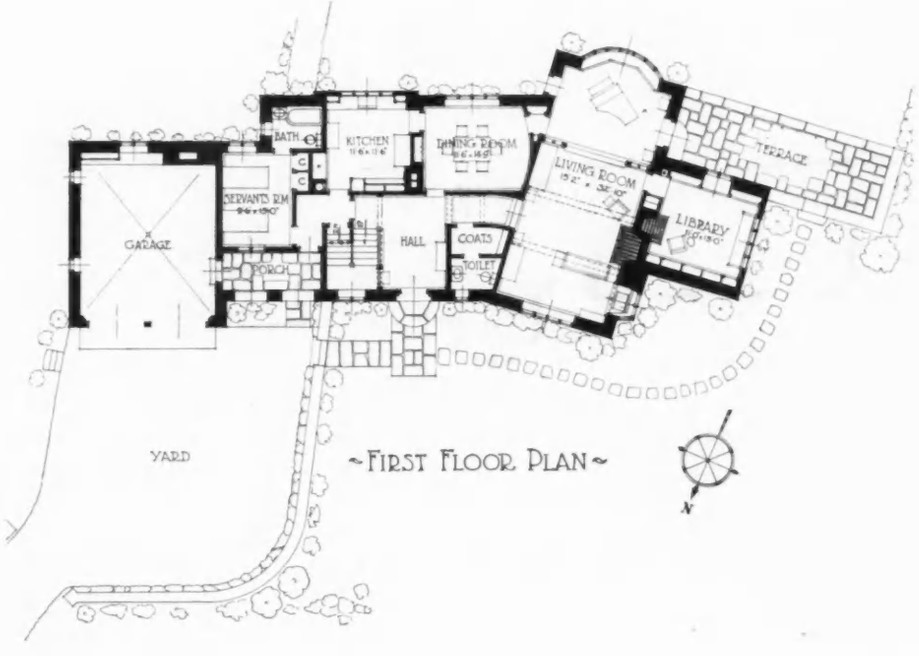


HOUSE OF JOHN WAGNER
LOS ANGELES, CALIFORNIA
H. C. NEWTON AND R. D. MURRAY, ARCHITECTS

Rittase

HOUSE OF PAUL CARPENTER
BRYN ATHYN, PENNSYLVANIA
HAROLD THORP CARSWELL, ARCHITECT

Rittase



HOUSE OF PAUL CARPENTER
BRYN ATHYN, PENNSYLVANIA
HAROLD THORP CARSWELL, ARCHITECT

Rittase

HOUSE OF PAUL CARPENTER
BRYN ATHYN, PENNSYLVANIA
HAROLD THORP CARSWELL, ARCHITECT

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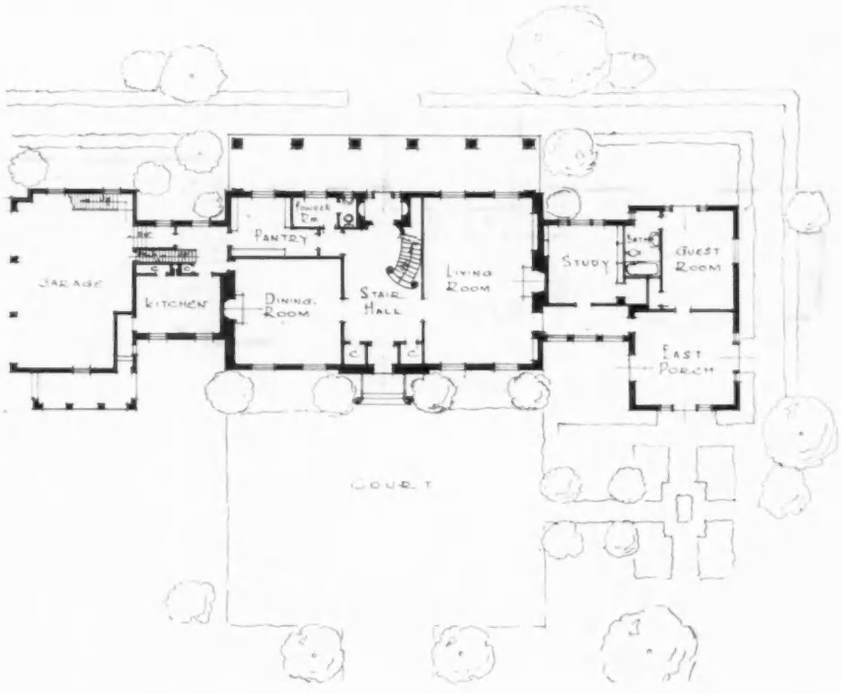
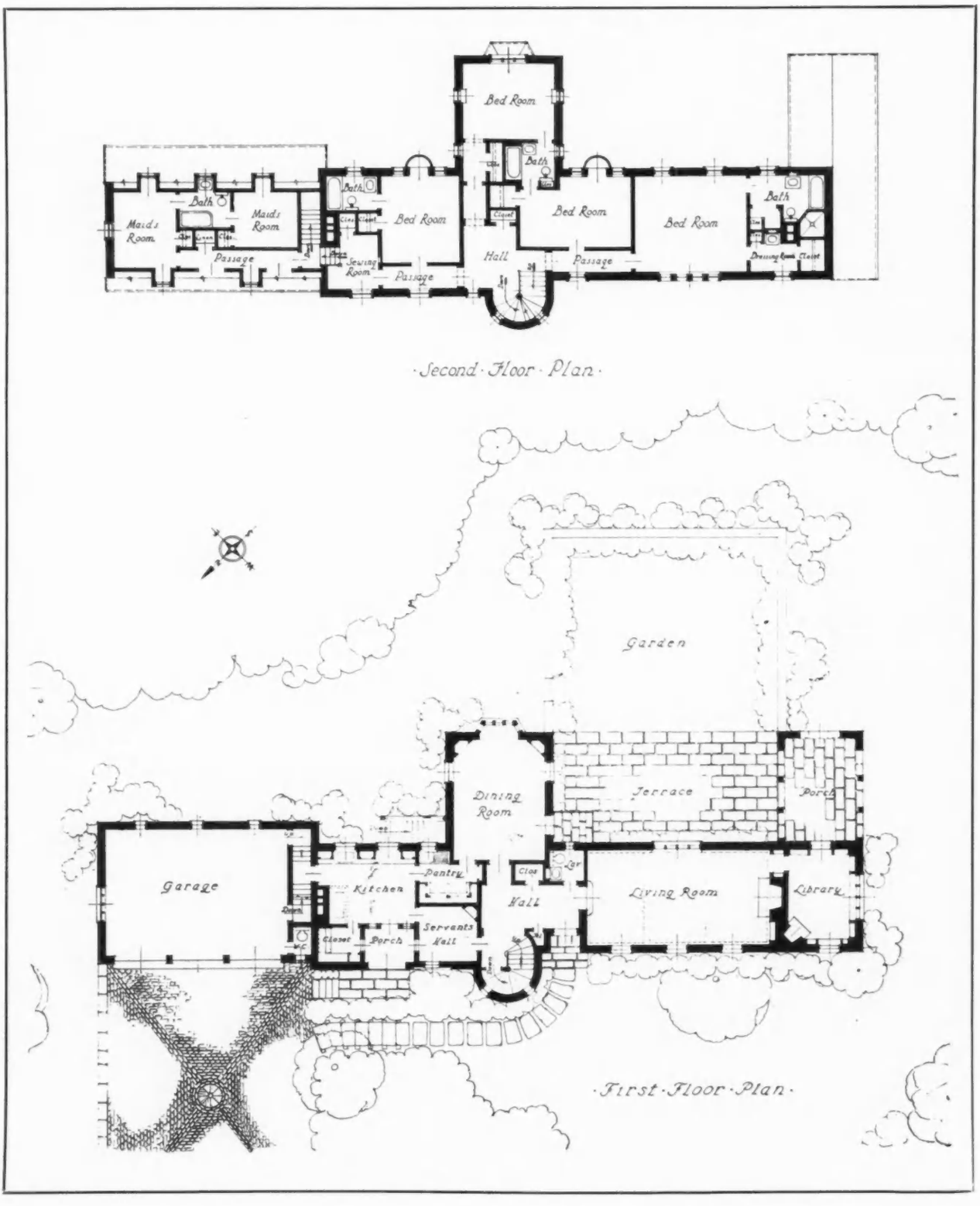


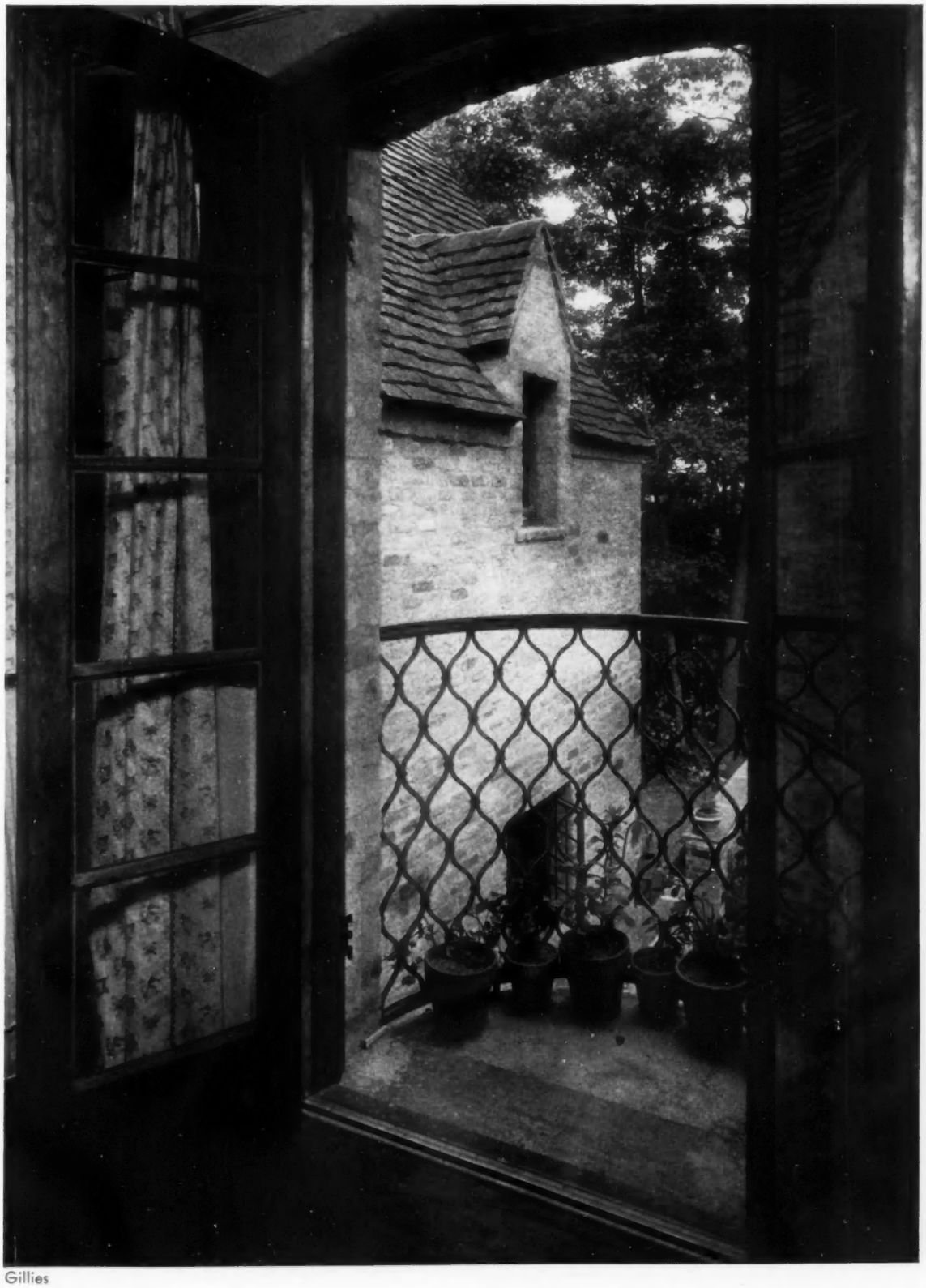
HOUSE OF BEVERLY JONES
HUNTLEIGH VILLAGE, ST. LOUIS COUNTY, MO.
STUDY AND FARRAR, ARCHITECTS

Gillies

HOUSE OF MR. AND MRS. GILBERT BROWNING
GREENWICH, CONNECTICUT
FRANK J. FORSTER AND R. A. GALLIMORE, ARCHITECTS



HOUSE OF MR. AND MRS. GILBERT BROWNING
GREENWICH, CONNECTICUT
FRANK J. FORSTER AND R. A. GALLIMORE, ARCHITECTS



Gillies

HOUSE OF MR. AND MRS. GILBERT BROWNING
GREENWICH, CONNECTICUT
FRANK J. FORSTER AND R. A. GALLIMORE, ARCHITECTS

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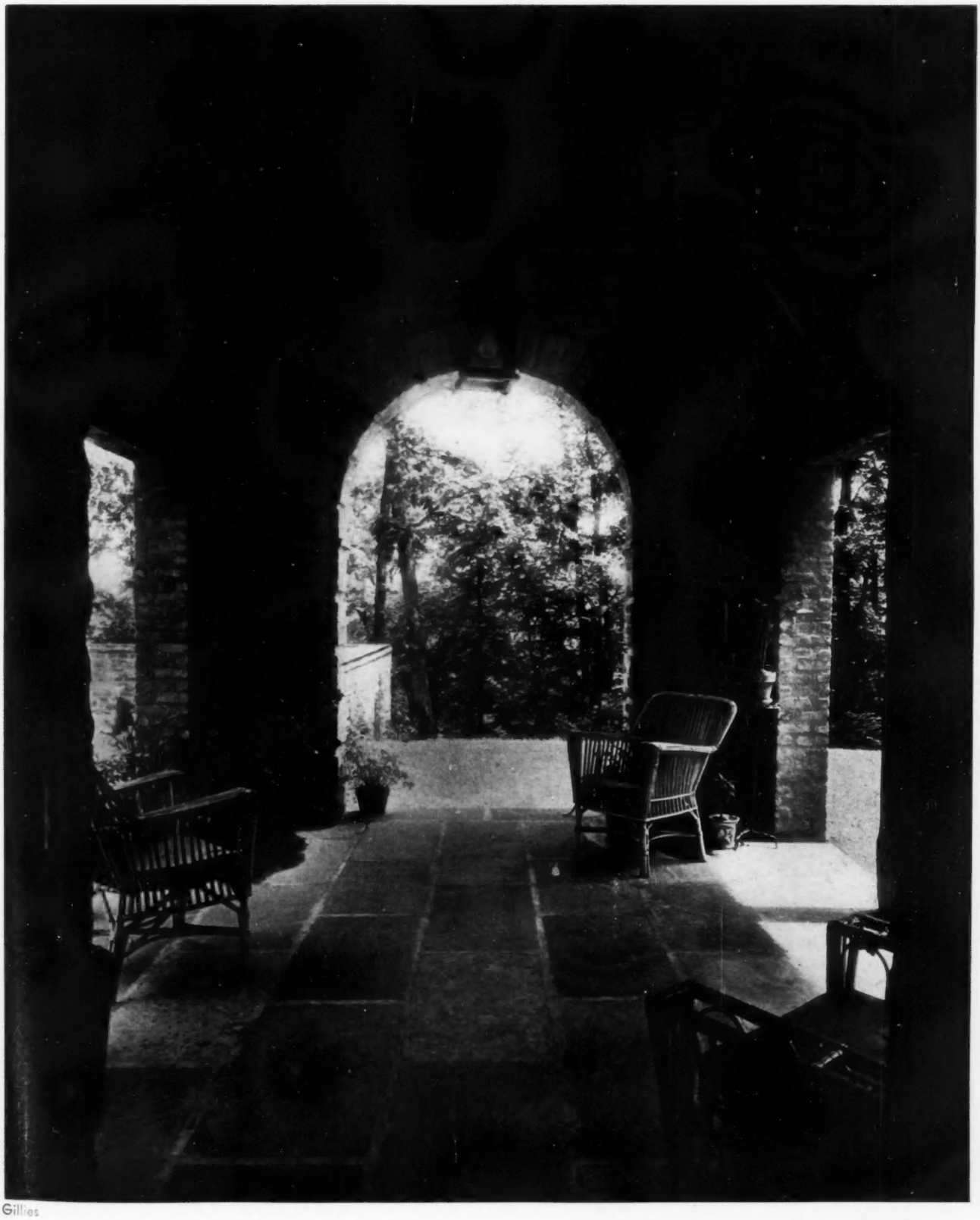

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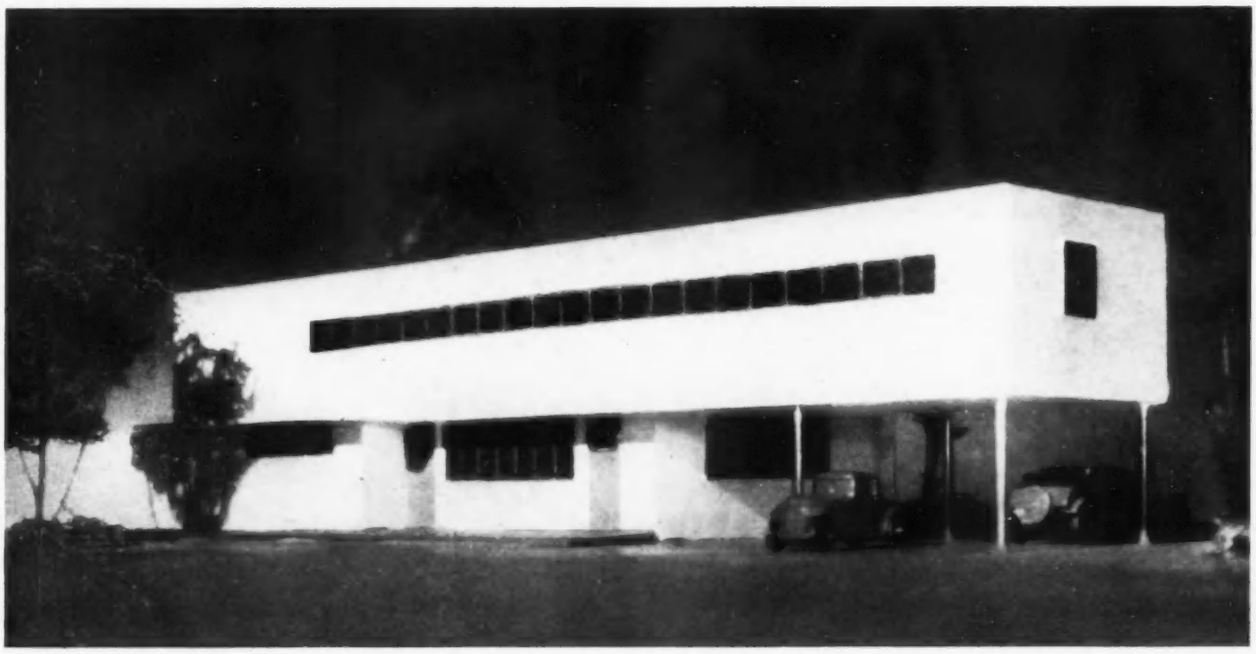
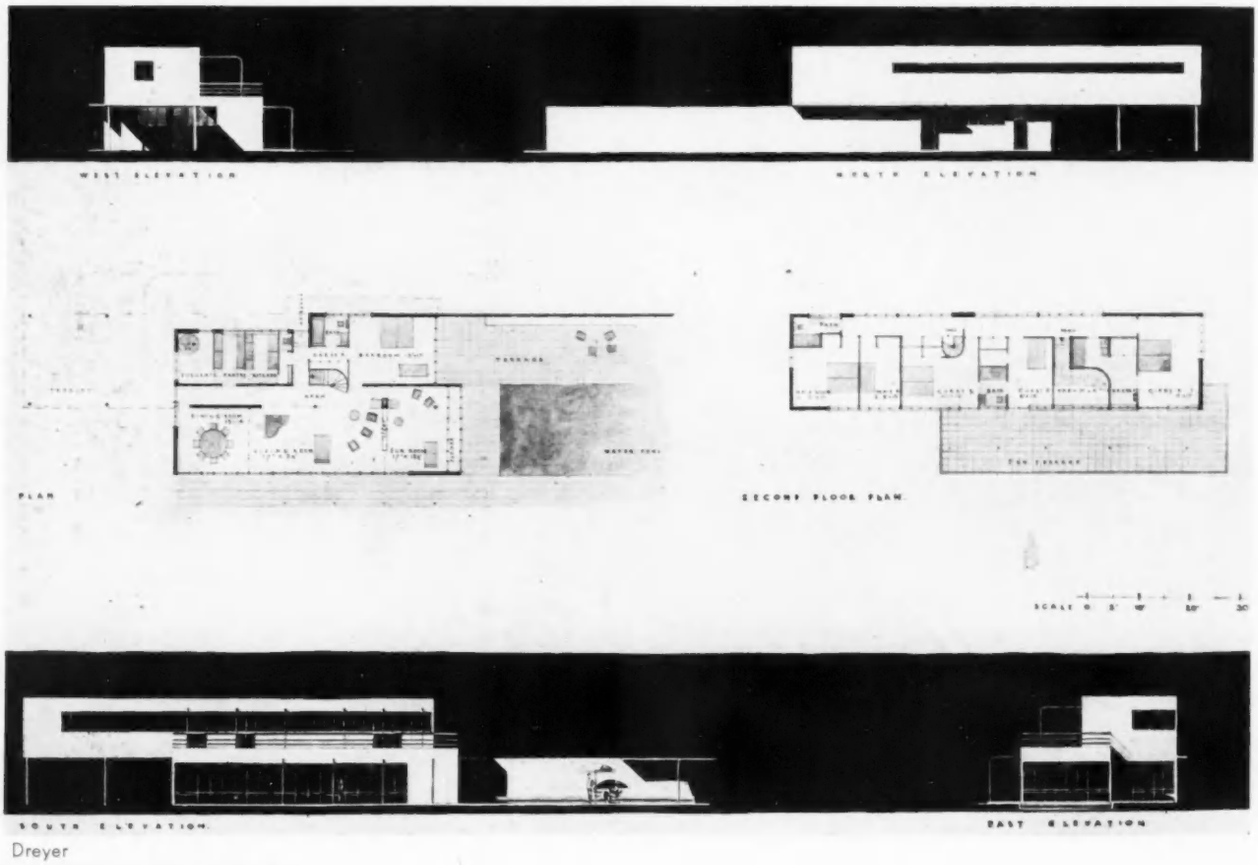
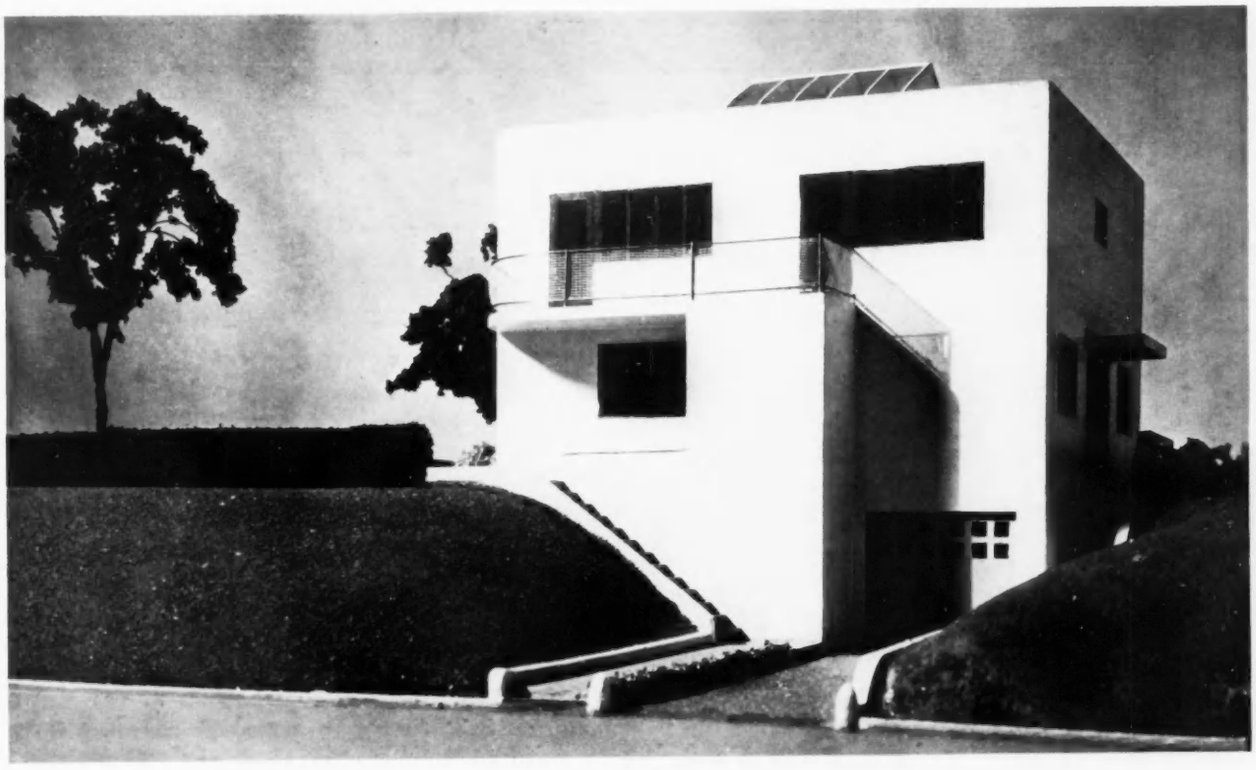
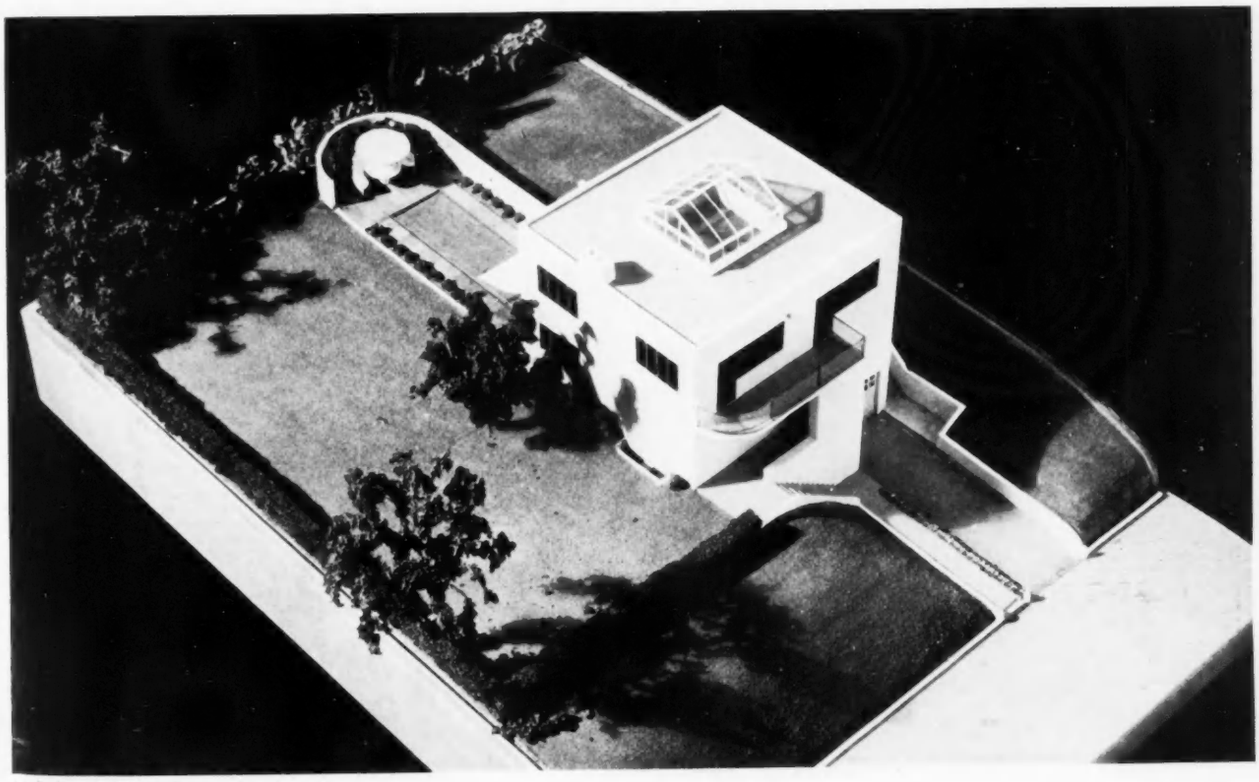




Dreyer

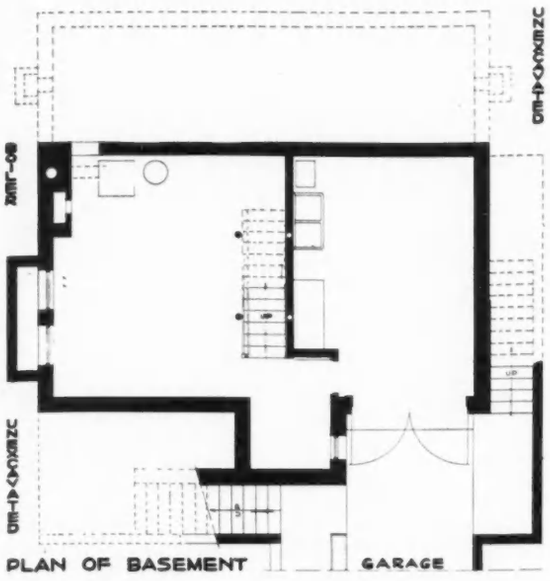
HOUSE FOR MRS. JOHNSON
PINEHURST, NORTH CAROLINA
CLAUSS AND DAUB, ARCHITECTS

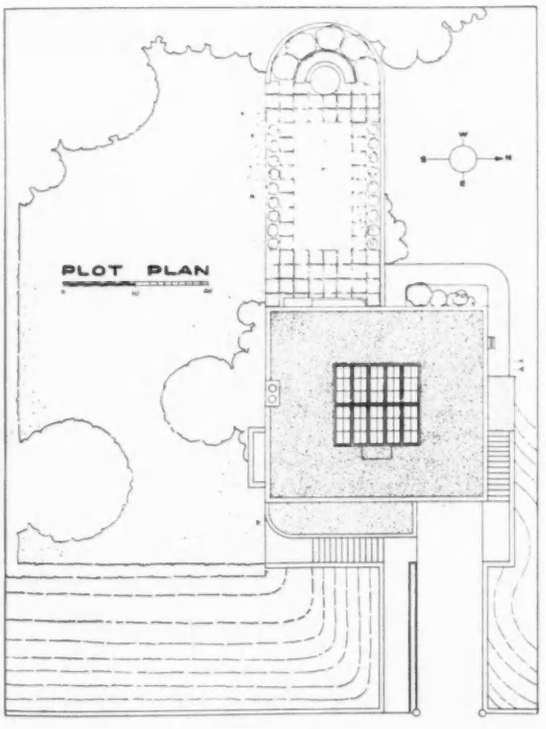


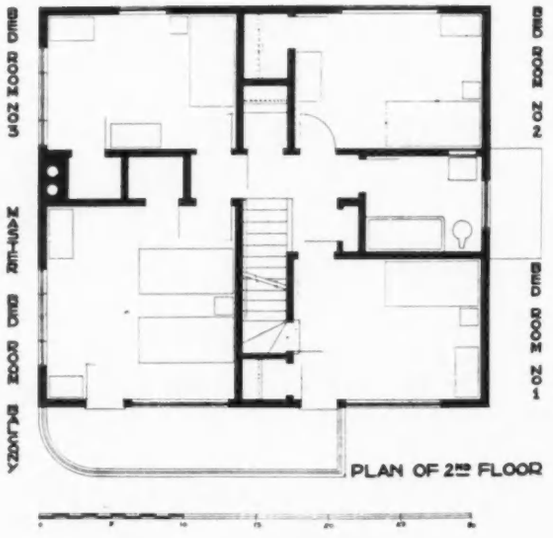


Nyholm and Lincoln

A SMALL SUBURBAN HOUSE
JOSEPH URBAN, ARCHITECT







SPECIFICATIONS

CUBAGE 24,511 FEET. ESTIMATED COST $11,000
THREE COATS PORTLAND CEMENT STUCCO ON SELF-CENTERING GALVANIZED METAL LATH ON EIGHT INCH SHEATHING DIAGONALLY APPLIED AND COVERED WITH HEAVY BUILDING PAPER / FIVE PLY BARRET ROOF / SOLID STONE CONCRETE FOUNDATIONS / CEMENT FLOOR IN BASEMENT AND GARAGE / SELECTED OAK FLOORS ELSEWHERE EXCEPT IN BATHS / TILED BATHS / STANDARD PLUMBING FIXTURES / HOT WATER PIPES OF BRASS / GAS BOILER / STEAM HEAT / INSTANTANEOUS WATER HEATER / METAL CASEMENTS / INSULATED EXTERIOR WALLS & ROOF / METAL BASE-BOARD / PLASTER BULL-NOSED INTO JAMBS

A SMALL SUBURBAN HOUSE

A SMALL SUBURBAN HOUSE
JOSEPH URBAN, ARCHITECT

Gottscho

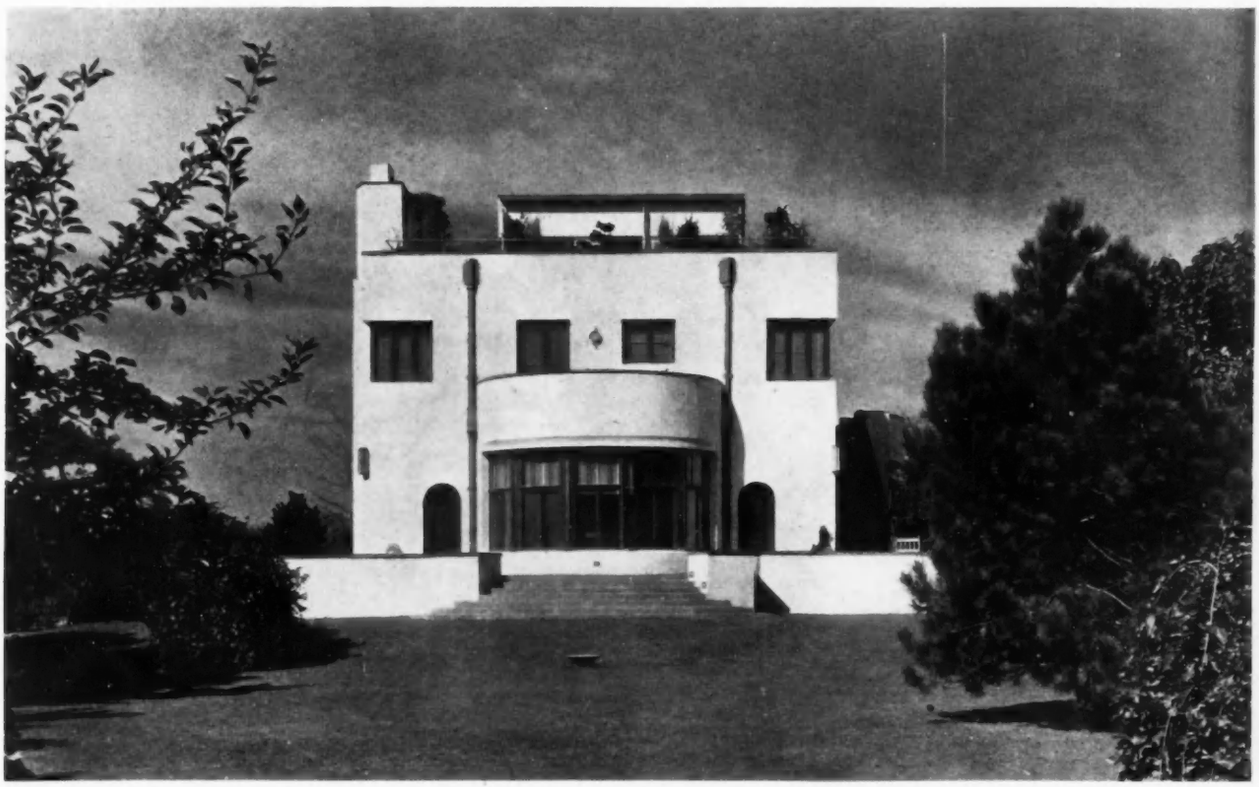
HOUSE OF LUCIEN N. TYNG
SOUTHAMPTON, LONG ISLAND
PEABODY, WILSON AND BROWN, ARCHITECTS

WEST ELEVATION

SECOND FLOOR PLAN

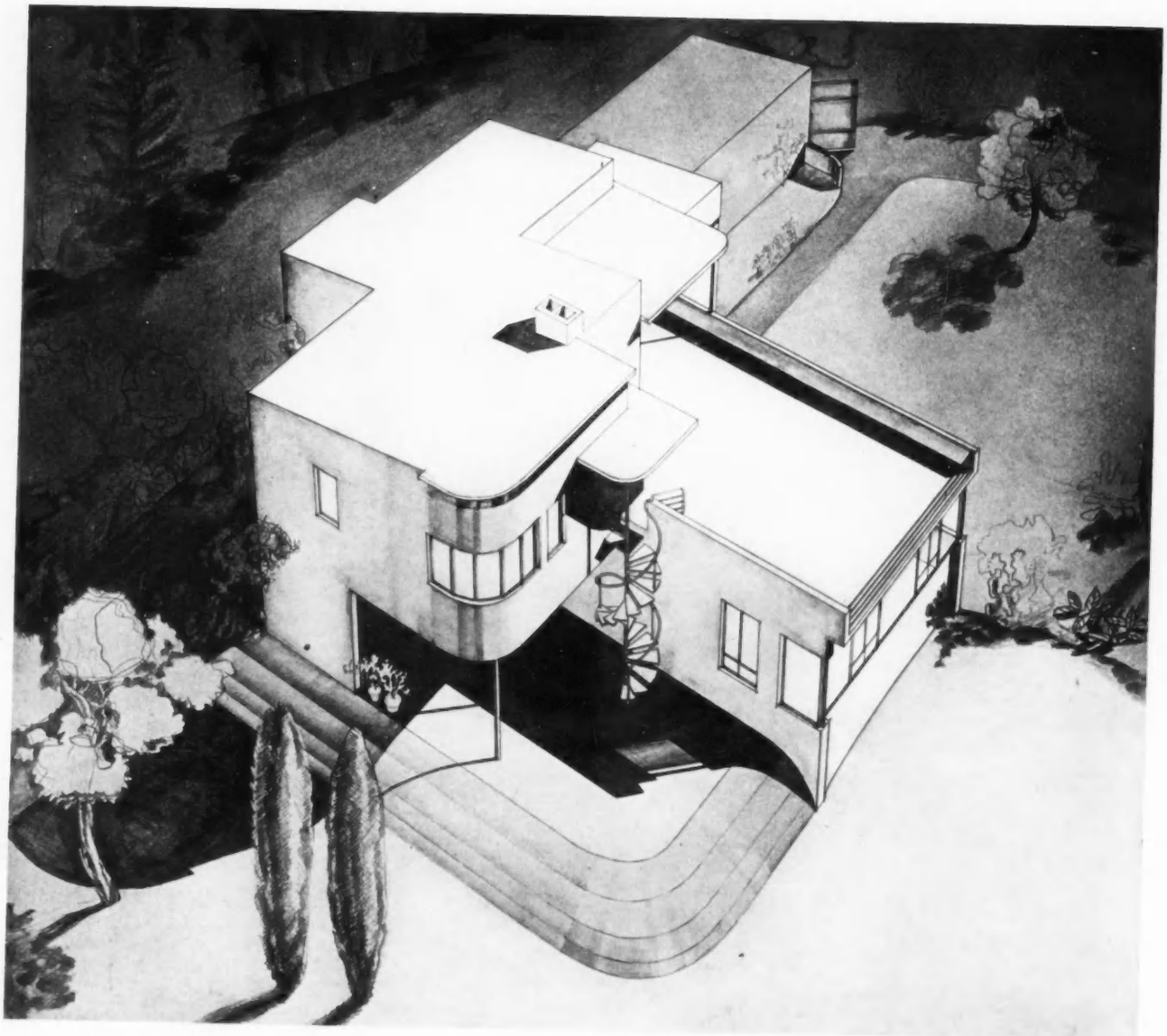
FIRST FLOOR PLAN

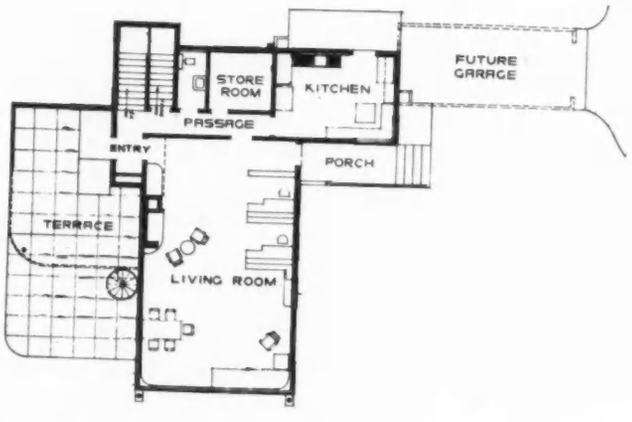
HOUSE OF LUCIEN N. TYNG
SOUTHAMPTON, LONG ISLAND
PEABODY, WILSON AND BROWN, ARCHITECTS

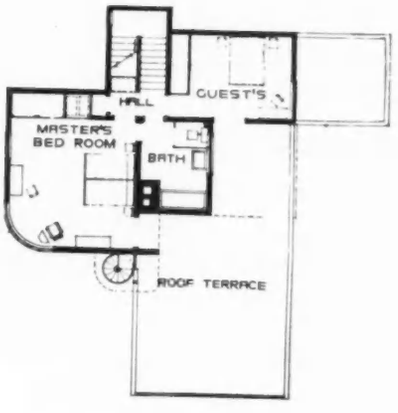


Gottscho

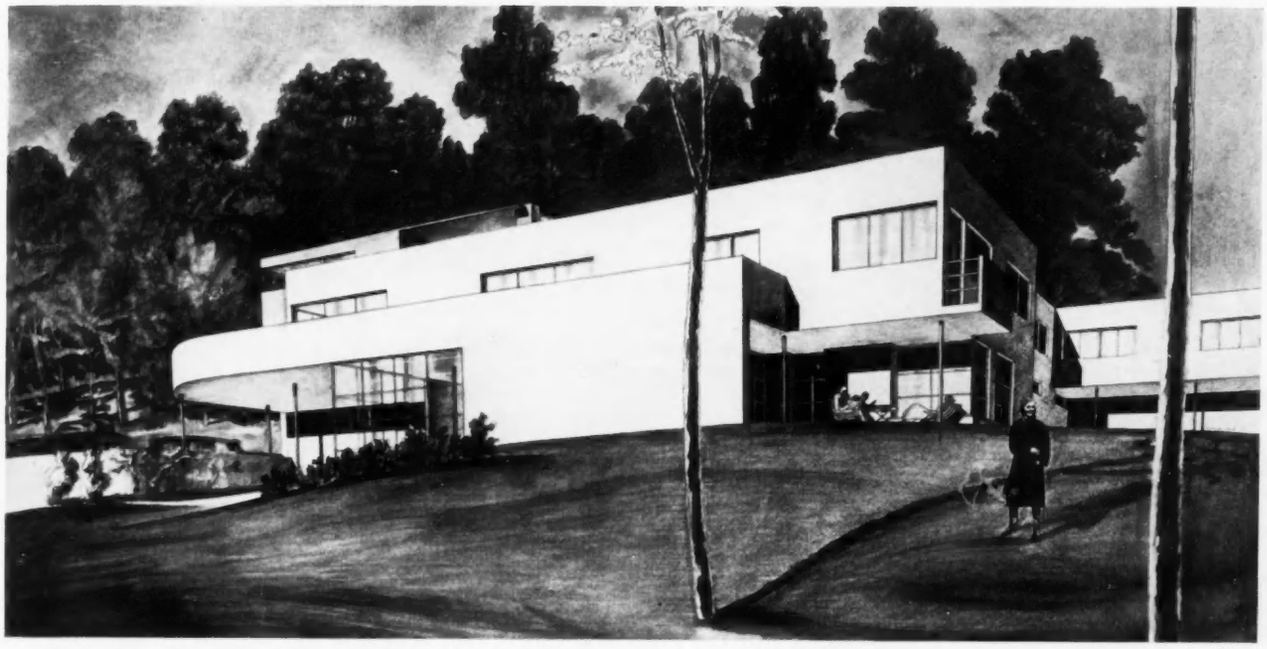
HOUSE OF LUCIEN N. TYNG
SOUTHAMPTON, LONG ISLAND
PEABODY, WILSON AND BROWN, ARCHITECTS

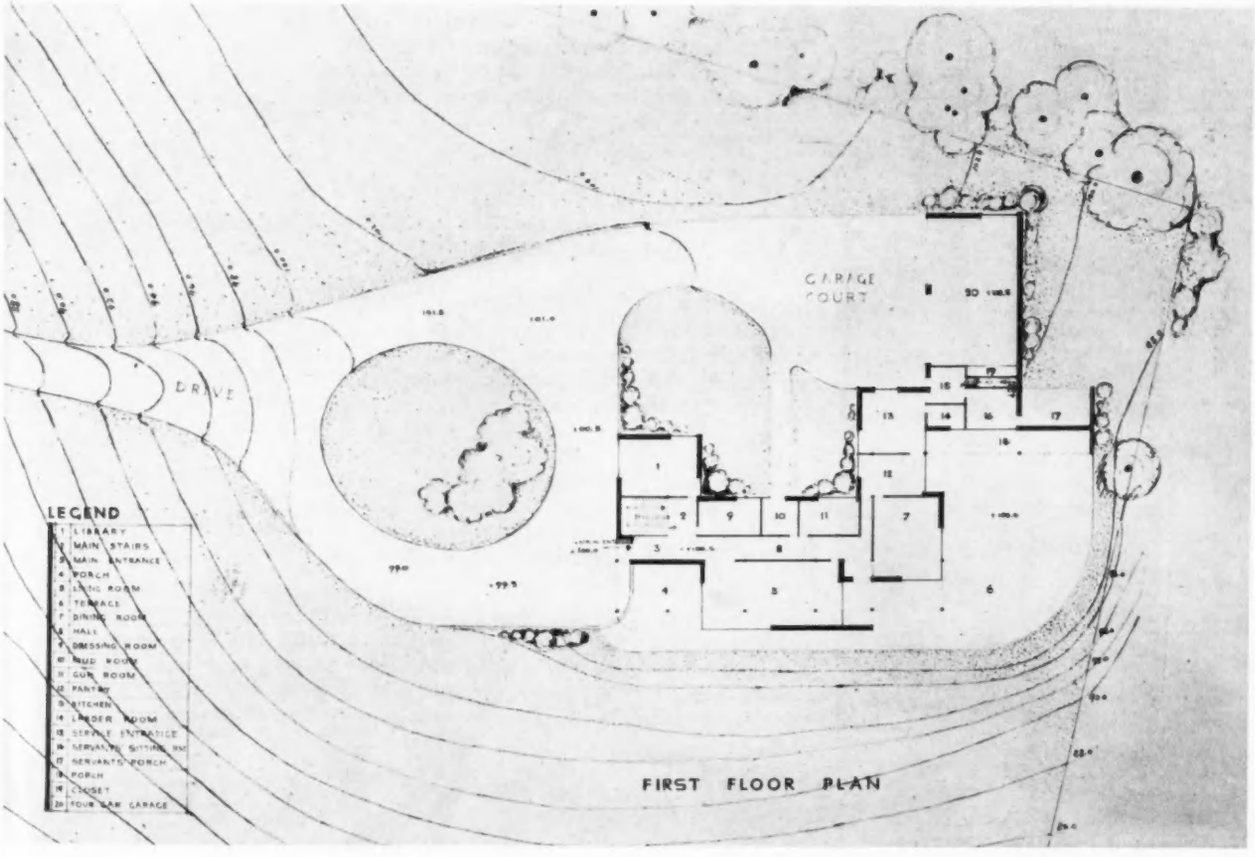






HOUSE FOR F. V. FIELD
HARTFORD, CONNECTICUT
HOWE AND LESCAZE, ARCHITECTS





HOUSE FOR ARTHUR PECK
PAOLI, PENNSYLVANIA
HOWE AND LESCAZE, ARCHITECTS

Pages 315-318
House of George F. Bayle, Jr., Glens Falls, New York
Godwin, Thompson and Patterson, Architects

Cost: approximately 50c a cubic foot. Construction: natural color stucco on cinder concrete blocks, troweled finish; mountain stone in rust and gray; graduated rustic roof. The pergola connecting the dining room and the garage is arranged as a place for tea, and therefore has direct connection to the service.

Tebbs and Knell

Pages 319-321
House of Dr. A. M. Billstein, Mountain Lake, Florida
Franklin Abbott, Architect

Cost: $28,200. Construction: faint blue stucco on frame; flat shingle tile roof. Sloping site allows basement living quarters. Patio has brick floor and planting at edges. Brick floors also in living and breakfast rooms, loggias and terraces. Living room ceiling paneled in cypress.

Poland

Pages 322-323
House of W. E. Nickey, Memphis, Tennessee
Jones, Furbringer and Jones, Architects

Cost: 55c a cubic foot. Construction: entire house, including all framing, storm sheathing, subfloors, siding, shingles and exterior millwork, built of Pacific Coast red cedar. Color scheme: sash and trim painted white; blinds painted pale Venetian green; roof stained light tobacco brown; brick chimneys painted white with black-trimmed tops.

Sanborn

Pages 324-325
House of Malcolm Farquhar, Kennett Square, Pennsylvania
E. William Martin, Architect

Cost: 56c a cubic foot. Construction: walls of stone from an old barn dismantled for this purpose; roof of hand-split cypress shingles left natural. Color scheme: millwork painted white and shutters dark green. The house is situated on a high point commanding a fine view of the surrounding country to the northeast.

Wallace

Pages 326-329
House of N. Paul Kenworthy, Meadowbrook, Pennsylvania
Carl A. Ziegler, Architect

Construction: Pennsylvania ledge rock, some of which was obtained in excavating the cellar; gravel mortar joints raked out to give a weathered appearance; roof of heavy graduated slate varying slightly in color. Color scheme: exterior woodwork painted a jade green to harmonize with warm gray of the face stone. The site is a wooded hillside.

INDEX OF COUNTRY HOUSES

Page 330
House of L. Martin Richmond, Glen Head, Long Island
Roger H. Bullard, Architect

Construction: exterior walls of narrow white pine clapboards, stained a weather brown; chimney of Holland brick; casement and sliding windows, painted a greenish blue; interior walls paneled and sheathed in some cases in white pine. Bedrooms are papered. Planked floors throughout.

Pages 331-333
House of N. Y. Stockwell, Los Angeles, California
Ralph C. Flewelling, Architect

First prize winner in 1930 House Beautiful Competition. Construction: brick veneer, brush coated with white waterproof masonry paint; 5/8" butt slate shingles obtained from a French quarry. Color scheme: exterior wood work was treated with asphaltum stain and white water color which, when burned, produced a gray; slates are gray with strong green veining.

Clarke

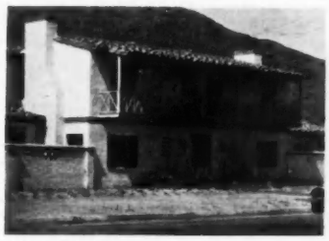
Pages 334-336
House of Lester G. Baldwin, Pasadena, California
Reginald D. Johnson, Architect

Construction: brick veneer painted a very light creamy white; tile roof shading from dark gray at the ridge to a warm black at the eaves; oak and walnut floors; interior walls of plaster or paneled walnut. Color scheme: shutters are a dark bottle green and the sash a creamy yellow. The garden facade faces south.

Haight

Pages 337-340
House of Mrs. Kate M. Greppin, Los Angeles, California
Marshall P. Wilkinson, Builder

Construction: wood frame and plaster; exterior walls double studded for insulation; roof of 3/4" by 36" cedar shakes. Interior finish of knotty pine. Each bedroom has a separate bath and dressing room. Trunk and linen rooms are also provided.



Mott Studios

Pages 341-345
House of Roger S. Sperry, Middlebury, Connecticut
Cameron Clark, Architect

Cost: $24,000. Construction: frame built from timber taken from an old barn. Color scheme: exterior of weathered warm gray shingles, cream trim, and reddish brown shutters. Interior walls of stained oak; no plaster work. House is built on sloping ground with view across valley to the village center.

Van Anda

Pages 346-348
House of James P. Mackel, San Marino, California
Douglas H. McLellan, Architect

This house is placed in an old orange grove. It follows the early California style. All detailing has been executed as authentically as possible following the few early examples of this style still extant. These details show Colonial precedents as carried out by Spanish workmen under primitive conditions.

Haight

Pages 349-350
House of John Wagner, Los Angeles, California
H. C. Newton and R. D. Murray, Architects

Cost: approximately $22,000. Construction: hollow walls of reinforced concrete; treated on the exterior with clear waterproofing so that the grain of the form lumber is sharply discernible through the coating; roof of tile varying slightly in color and laid irregularly.

INDEX OF COUNTRY HOUSES

Rittase

Pages 351-353
House of Paul Carpenter, Bryn Athyn, Pennsylvania
Harold Thorp Carswell, Architect

Construction: exterior walls built of Germantown stone, random coursed; half timber and stucco used in parts; one gable end has weather boarding, rough side out with waved edges and with boards clipped back at the rake. Common brick used for drip courses. Interior trim of oak and pine. Exterior walks of flagstone.

Trefts

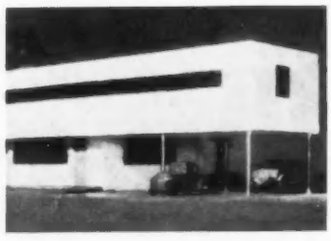
Page 354
House of Beverly Jones, Huntleigh Village, Missouri
Study and Farrar, Architects

Cost: approximately $125,000. Construction: common brick painted white; roof of gray green Vermont slate. Color scheme: main rooms on first floor are painted white; the study is of white pine, natural stain; the sun room is gray green, with a waxed green and purple slate floor. The house is in a new development of building sites averaging 10 to 20 acres.

Gillies

Pages 355-361
House of Mr. and Mrs. Gilbert Browning, Greenwich, Conn.
Frank J. Forster and R. A. Gallimore, Architects

Construction: exterior walls of brick veneer on hollow tile; sandstone trim on main entrance, bay window and main cornice; brick quoins at windows and arches; casement windows of leaded glass in steel sash; roof of handmade tiles in antique shades of reds and browns. Bluestone flagging used for walks, garden terrace and living room porch.



Page 362
House for Mrs. Johnson, Pinehurst, North Carolina
Clauss and Daub, Architects

Estimated cost: $30,000. Construction: welded metal frame, finished in stucco, transite or aluminum (to be decided); railings and columns of aluminum; interior finish of painted plaster. Between living room and sun room is a glass partition; between living room and dining room, a sliding partition.

Nyholm and Lincoln

Pages 363-364
A Suburban House in New York
Joseph Urban, Architect

Estimated cost: $11,000. Construction: stucco on metal lath and sheathing; concrete foundation; metal casement windows. Cement floor in garage and basement; elsewhere, except in baths, selected oak floors. Color scheme: white stucco and blue trim.

Pages 365-367
House of L. H. Tyng, Southampton, Long Island
Peabody, Wilson and Brown, Architects
Construction: exterior walls of 12" brick, with metal furring and pale cream stucco; interior walls of terra cotta and gypsum blocks, resting on floors of steel and reinforced concrete slabs, gray-blue steel casement sash. Balconies and roofs covered with stone slabs or tiles; heavy black slate coping on parapets.

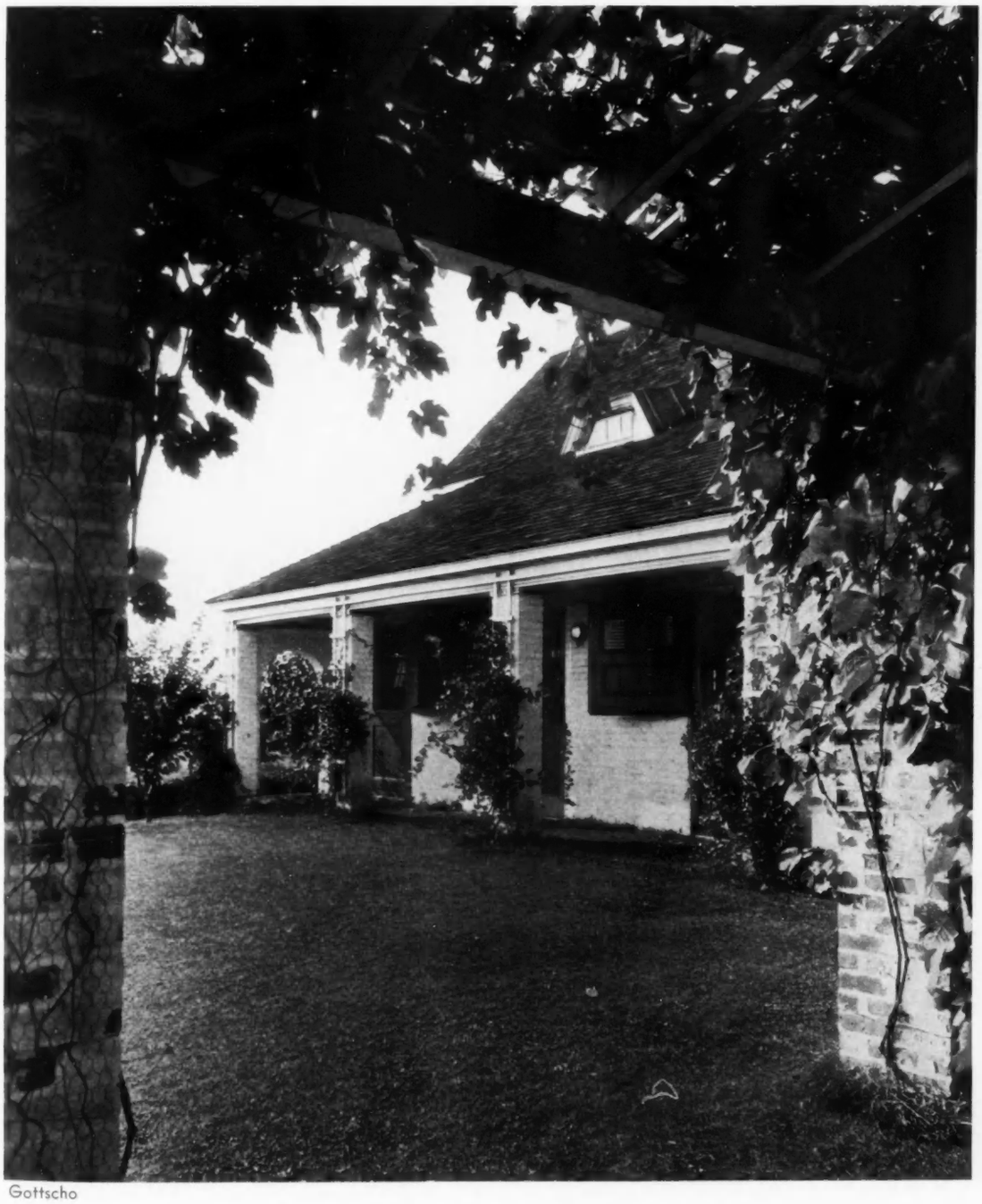
Page 368
House for F. V. Field, New Hartford, Conn.
Howe and Lescaze, Architects
Estimated cost: $25,000. Construction: welded steel frame and concrete floor slabs, with stucco exterior.

Page 369
House for Arthur Peck, Paoli, Pennsylvania
Estimated cost: $147,000. Construction: steel frame and concrete floor slabs; curtain walls of brick.

TECHNICAL NEWS AND RESEARCH

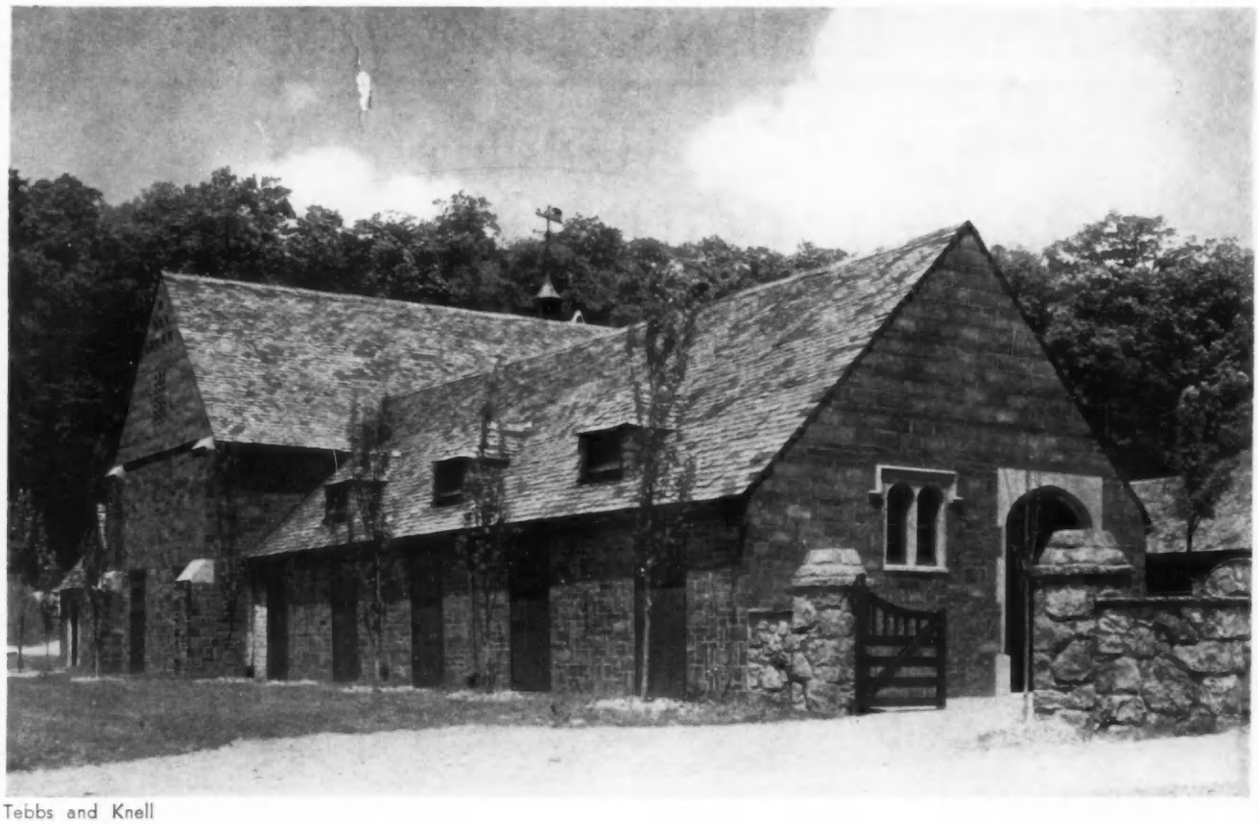
SERVICE BUILDINGS FOR THE COUNTRY ESTATE

By C. THEODORE LARSON

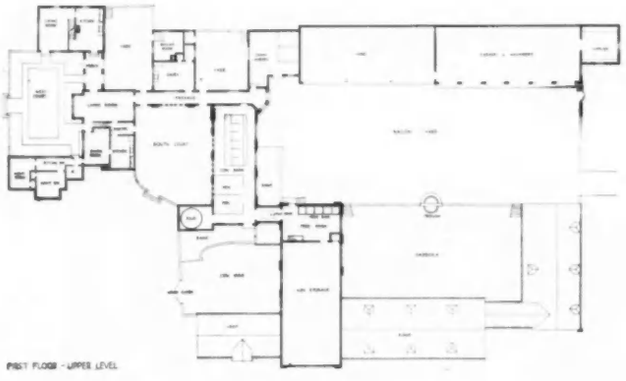


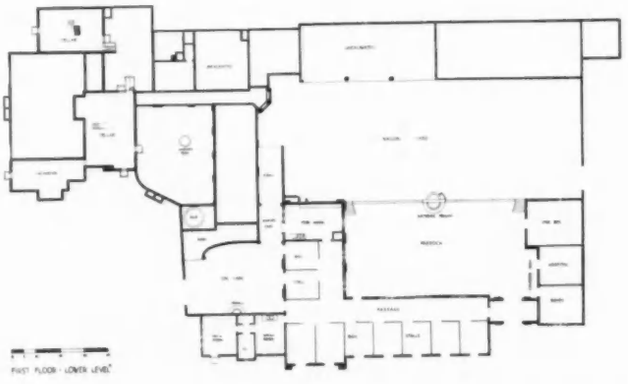
Gottscho

LANGHORNE GIBSON STABLE AT BEDFORD, NEW YORK
PEABODY, WILSON AND BROWN, ARCHITECTS



Tebbs and Knell





This stable group is built on a sloping site with the cow barn on a higher level than the horse stable. Proper drainage is insured by placing the cow yard on the lower level.

The paddock and cow yard are protected from cold winds by the grouping of buildings. Passageways permit the cattlemen, in inclement weather, to take care of the animals without going out of doors.

The hay storage, bins and feed rooms are centrally placed, convenient to both the cow barn and the horse stable.

CATTLE AND HORSE BARNS
ESTATE OF JOHN W. LAWRENCE NEAR PITTSBURGH
ALFRED HOPKINS, ARCHITECT

DESIGN OF CATTLE BARNS*

The technical developments of recent years have brought many improvements to eliminate the sources of contamination which used to prevail in the dairy barn. Absolute cleanliness is necessary for the welfare of the cows and more especially for the purity of the milk. The combine milking stall, described in this article, is a recent device which insures proper sanitation. Air conditioning is another development which, it appears, will receive consideration in the future planning of cattle barns.

Location

The building site should be well drained and the barnyard should slope away from the barn so that water will run off quickly. Sunlight should not be obstructed. A windbreak of trees or other buildings against prevailing cold winds is an advantage in winter.

Facilities for getting hay and feed into the barn, convenience of the barn to pasturage and to other buildings and to service drives, and the possibility of future expansion are other factors to be considered. In some sections the housing of cows and horses in the same building is prohibited by milk ordinances; such legislation should of course be investigated.

Sunlight

So essential is sunlight to the health of the dairy cow and to the destruction of disease germs that it cannot be insisted on too strongly. Ample window area should be provided. The loss of heat through glass may be remedied by using double glazed sash or, in winter, by using storm sash.

Air Space

Since the temperature of the barn is directly affected by the body heat of the animals, this factor must be considered in determining the cubic space of the barn. The U. S. Dept. of Agriculture states that in northern states from 500 to 600 cubic feet per cow are sufficient; in southern states, because of the long period of warm weather, 1,000 cubic feet per animal are more satisfactory. A stable 36 feet wide, for example, should have an 8- or 9-foot ceiling in order to furnish from 500 to 600 cubic feet of air space for each cow.

Arrangement of Cattle

Milking cows are kept separate from the young stock and the dry cows. A greater degree of cleanliness is necessary for the milking cows, and consequently they should have a compartment for themselves. Calf and calving pens and quarters for the dry stock and the bull, as well as for the milking cows, are often provided under one roof.

When the cattle are placed in double rows, perhaps the best arrangement is face to face. Headed in, the cows are more easily fed and they do not face the light; the gutters are next to the windows where they can be sterilized by the sunlight, and there is no chance of cows in opposite stalls being spattered by droppings. Headed out, the cows are more convenient for machine milking; cleaning is done from a single alley and less litter carrier track is required.

Feed alleys should be at least 4 feet wide, or enough to permit the passage of feed trucks or carriers. When cows head in, litter alleys should be 5 feet wide; when cows head out, a width of 7 feet or more is desirable.

Stall Dimensions

The size and arrangement of cow stalls, except for a few details, have become nearly standardized in general practice. Comfort for the cow is a major consideration. The old-fashioned rigid wooden stanchion—actually a pillory—has been replaced by the swinging stanchion which gives the cow more freedom and allows her a natural position.

Manufacturers of cow-stable equipment have adjustable devices for moving the stanchion supports either forward or backward to accommodate various sizes of cattle. Another method is to taper the length of the stable platform, so that it is longer at one end than at the other; the cows are then arranged according to size.

Stall dimensions should vary not only with breeds but also with individual cows. In general, Jerseys can be housed comfortably in stalls from 3′ 2″ to 3′ 6″ wide and 4′ 6″ to 4′ 10″ long; Guernseys in stalls from 3′ 4″ to 3′ 8″ wide and 4′ 8″ to 5′ 0″ long; and Holsteins in stalls from 3′ 6″ to 4′ 0″ wide and 5′ 0″ to 5′ 8″ long. In a few cases even larger stalls are required.

After a study of the length and weight of dairy cows, the following formula for stall length has been evolved by Iowa State College:

$$L \text{ (in inches)} = \frac{W}{50} + 37$$

That is, stall length in inches equals weight of cow in pounds divided by 50 plus 37 inches.

Stable Floor

Concrete is commonly used for alleys, driveways, gutters and mangers. It is durable and easily

* Appreciation is expressed for the assistance, in preparing this study, of the U. S. Dept. of Agriculture, Louden Machinery Company, J. W. Fiske Iron Works, Carrier Engineering Company, B. F. Sturtevant Company, and the office of Alfred Hopkins, architect.

cleaned, but the surface should be hardened and treated so as to avoid dust. Because of its high conductivity of heat, however, concrete for the cow-stall floor has been found objectionable since the cattle become chilled and ailments may result. Plenty of bedding will obviate this difficulty somewhat. Plank floors bedded permanently in the concrete are unsatisfactory and insanitary. Cork brick, although expensive in first cost, are recommended by the Dept. of Agriculture; the cork is not only a good insulator but also resilient and easy on the cow's feet. Creosoted wood blocks, laid in hot asphalt or pitch, have also been used.

Special care must be taken in laying the concrete floor so that proper drainage is obtained. The whole floor should have a fall of 1 inch in 10 feet, either toward the center or from end to end of the building. The concrete is usually laid 4½ or 5 inches thick. Where heavy trucking is expected, the floor thickness should be increased correspondingly. A rough float finish is desirable for the concrete walks so that the animals will not slip. Elsewhere, for cleanliness, the concrete should be trowelled smooth. Coved corners facilitate the cleaning process.

Gutters

A recommended gutter width is 16 inches. Next to the stall platform it should be 8 inches deep; next to the litter alley, 5 to 7 inches deep, depending on the level of the litter alley. A good slope is 1 inch to 10 feet; with this grade, the runs should be under 25 feet in length so that the gutters do not become deeper than desirable at the low point. Two runs may be served by a single drain.

The gutter drains are sometimes arranged so that the liquid manure will be collected in a concrete tank for use as fertilizer. This system requires extra labor; a more common method is the use of bedding to absorb the manure, so that only the wash water goes into the sewage.

Feeding and Watering Troughs

The troughs should be made integral with the concrete floor and, for reasons of sanitation, trowelled to a very smooth finish. The bottom should be 1 inch higher than the stall platform level at the stanchion curb; the width should be not less than 26 inches nor more than 37 inches overall. The trough should have a slope of 1½ or 2 inches in 100 feet with a drain emptying into the gutter.

Divisions, if desired, should be hinged so that they can be raised when the manger is being scrubbed or swept; because of the difficulty in keeping too many corners clean, permanent divisions are not desirable.

The curb between trough and stall should be 5 inches wide; it is 6 inches high where the stanchion is anchored. A "feed-saving" curb, 11 inches high except for a curved cut-out with a 6-inch height at each stanchion place, is also used; this construction prevents the cow from working feed back over the curb to her left and right and wasting it on the stall floor. It is equally desirable that the front edge of the feed trough be high enough so that the feed is retained.

The feed alley floor level should be preferably lower than the top of the manger so that the dust and dirt of the floor can more adequately be kept out of the trough.

Individual water bowls are used extensively. Obviously there is less danger of spreading disease and the cow is able to drink whenever she wishes. The water supply lines to the individual bowls may be installed under the concrete close to the curb when the stall floor is laid, or they may be clamped to the top rails of the stalls.

Pens

For sick animals or for cows that are calving, inside pens are essential. The cow pen should not be less than 10 feet square; 10 by 12 feet or 9 by 14 feet are preferable sizes.

Calf pens may vary in shape and size according to the number of calves; at least 16 to 20 square feet per calf, and 25 to 35 square feet per animal for young stock 6 months or older, are recommended. Partitions are 3′ 8″ or higher. Each pen should be equipped with gate, drain, water bowl and feed manger; stanchions should be provided for feeding. Dutch doors are often used to give access to small yards, since a separate run for young stock is an advantage.

The bull is better natured when kept with the other cattle than by himself. His pen, usually with a post in the center, should not be less than 12 by 14 feet; it also frequently has an outside entrance for easy access to the exercise yard. The partitions of the bullpen should be made strong and, for safety, increased a foot over the usual 3′ 8″ height; solid partitions are objectionable as preventing a free circulation of air. A concrete corner manger with heavy stanchion is usually provided.

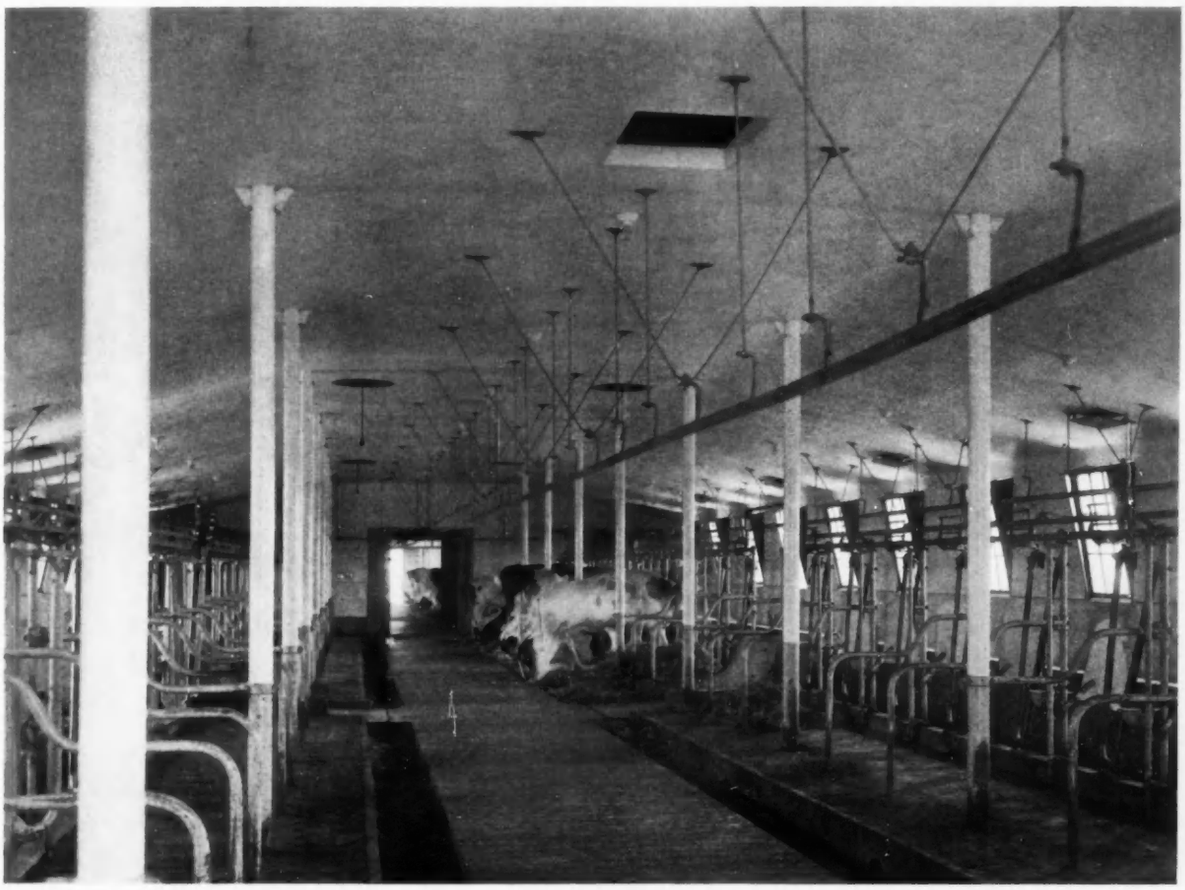
Ventilation

Fresh air is as important to live stock as to human beings. Proper ventilation is a most vital consideration since the health and milk flow of the cow depend very largely on the warmth and dryness of the barn in which she is housed.

The average barn depends entirely on the animals for heat. Until comparatively recently very little was known of the heat production of farm animals. It has been learned that a 1000-pound dairy cow, under average conditions, will produce approximately 3000 B.t.u. per hour. A high temperature is not necessary for comfort of the animal; the most desirable temperature for breathing is approximately 50° F.

In any animal shelter where body heat is the thermal source, the problem of ventilation is entirely opposite to the problem involved in artificially heated buildings. The objective of the former is to remove moisture, that of the latter to raise the relative humidity.

A good ventilation system will supply fresh air



Sizes of cow stalls should vary according to the cows. Feed and litter alleys should be wide enough to permit the passage of trucks or overhead carriers.

ESTATE OF HERBERT N. STRAUS AT RED BANK, NEW JERSEY
ALFRED HOPKINS AND ASSOCIATES, ARCHITECTS

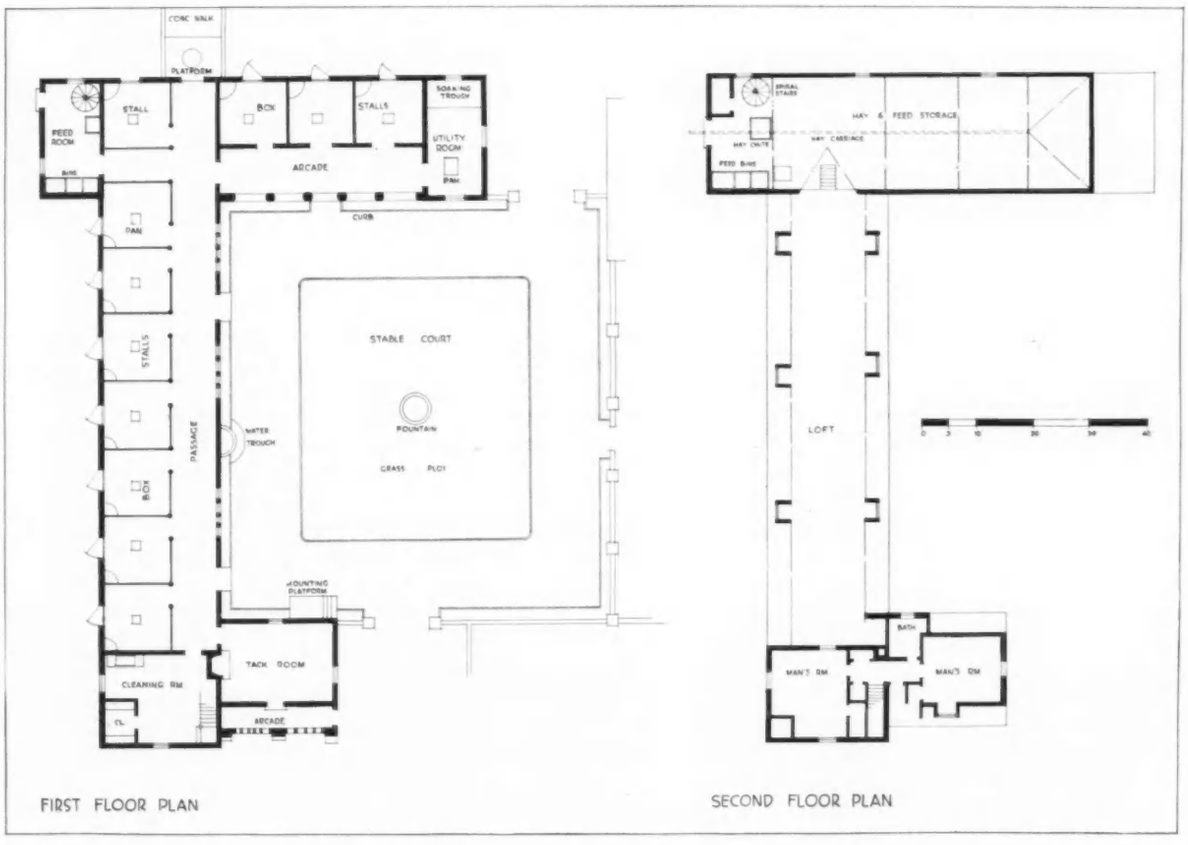
and remove foul air and moisture without causing drafts and make possible the control of the temperature of the barn. Various systems now in use are described in a pamphlet issued by the U. S. Dept. of Agriculture, *Principles of Dairy-Barn Ventilation*, Farmers' Bulletin No. 1393.

The King system, most commonly used and recommended as generally satisfactory, operates on the principle that warm air tends to rise, and cold air to settle. For maintenance of satisfactory conditions 3,600 cubic feet of air per hour per cow should be supplied. Outlet flues with an area of 1 square foot are considered sufficient for 5 cows; a flue 2 feet square will provide for 20 cows. Large flues are more efficient than several smaller ones of equal area. In extremely cold climates the outlet flue should extend down to within 12 or 18 inches from the floor; in mild climates, only to the ceiling. Fresh air intakes should be small in area and placed from 7 to 10 feet apart; they should be so arranged that the outside openings are at least 5 feet below the inside stable openings to prevent any back flow of warm air. Under most conditions the total area of all inlet flues should be approximately equal to the total area of outlet flue or flues. In a properly designed ventilator the wind will create an outward suction and assist in removing the foul air.

When cold air is introduced into the barn and warmed by the animal heat, it has a drying effect which is evidenced by the absorption of moisture. If the circulation is decreased, the air tends to become saturated with vapor and any decrease in the stable temperature will cause condensation on the walls. Humidity control is as necessary as temperature control. At present, with carefully designed ventilation systems, satisfactory results may be easily obtained, although much depends on the care and intelligence of those in charge of the barn. It seems likely, however, that in the future, in the case of large dairy farms, air conditioning may become practical.

In recent tests by the New Jersey Agricultural Experimental Station on the effect of temperature and humidity on milk production, it was found that the critical humidities were between 70 per cent and 90 per cent. Between these points it is possible to plot a curve of variation in production with relative humidities and to predict a day in advance what the drop in production will be with

CATTLE AND HORSE BARNS



A circular opening in the concrete platform over the outside drive facilitates the removal of litter from the stable.

ESTATE OF HERBERT N. STRAUS AT RED BANK, NEW JERSEY
ALFRED HOPKINS AND ASSOCIATES, ARCHITECTS

a rise in relative humidity; this drop can amount to as much as 1 or 1½ quarts a day.

It has also been discovered not only that periods of hot, humid weather appreciably reduce the milk production but that with the return of more favorable weather the recovery of production is *not* complete for several days. Air conditioning would tend to maintain the milk production at a high and constant level.

Construction

Since the animal heat is so necessary for ventilation, every effort should be made for its conservation. The amount of insulation required in the barn construction will depend, of course, on climatic conditions.

An error often made is the use of a concrete foundation wall from 1′ 6″ to 4′ 0″ high around the barn in an attempt to obtain an easily cleaned surface. The heat conductivity of concrete is very high, and as a result the building will be cold and uncomfortable. The concrete foundation should be as low as possible and yet protect the sill from ground moisture. Exposed walls and ceilings should be insulated to prevent heat loss and condensation; at the same time the wall material should be nonabsorbent and easily cleaned. All corners should be coved, and moldings and projections eliminated.

Feed Storage

A feed room should be conveniently near the live stock and the silo and hay barn. Separate feed bins, lined with metal, are needed for the young stock, the dry stock, and the milking cows, all of whom require different rations. By storing the grain overhead and installing a feed grinder, the feed storage is removed from the reach of any cow that might become loose in the barn. The silage chute can be located in the feed room and by spotting the feed truck under it much re-forking can be saved. An outside door will give loaded wagons or trucks access to the feed room.

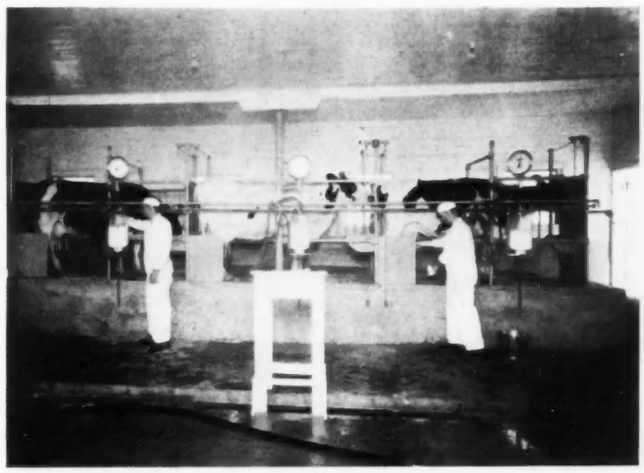
Hay lofts have been found objectionable when placed over the milking quarters, since at haying time too much dust is raised.

Milking Room

The advent of the combine milking stall, within recent months, has made radical changes in the dairy industry. Instead of the milking equipment being taken to the cow stalls, *the cows are brought to the milking machine*. Leaving the feeding room, the cows first enter a washing stall where they are cleaned and dried, and then they enter the milking stall. The milk flows into glass containers where it is weighed and then sent through pipes to the milk house to be cooled and bottled. Not once is the milk exposed to the air or to contact with human hands. This method of milking is flexible and most efficient for large herds.

Dairy Rooms

Before being bottled the milk should be cooled, a procedure which requires mechanical refrigeration, ice packing, or running cold water. Separators, butter workers, churns, cream-ripening vats and other equipment must also be considered. A washroom is necessary for proper sterilization of all utensils used in the dairy; a boiler room should be provided to furnish the live steam. Above all, the dairy should be kept free from flies, odors and dust.



Louden Machinery Co.

Combine milking stalls. The milk flows into glass containers, is weighed and sent through pipes to the dairy to be bottled—without once being touched or exposed to the air.

Cow Yard

An exercise yard for the cattle should be provided for winter use. The various buildings in the service group are often arranged to form an inclosure which will shelter the herd from the wind. It is desirable, for sanitary reasons, that the cow yard should not adjoin the milking barn, and an isolated yard, protected on three sides by a solid fence, is considered better. In cold climates the exercising space should have a wide shed for shelter from the snow.

Hay Barn

The hay barn should be convenient to both the cow barn and the horse stables. Used primarily for storage, its construction should be such that the handling of hay either by fork or in bales is not obstructed.

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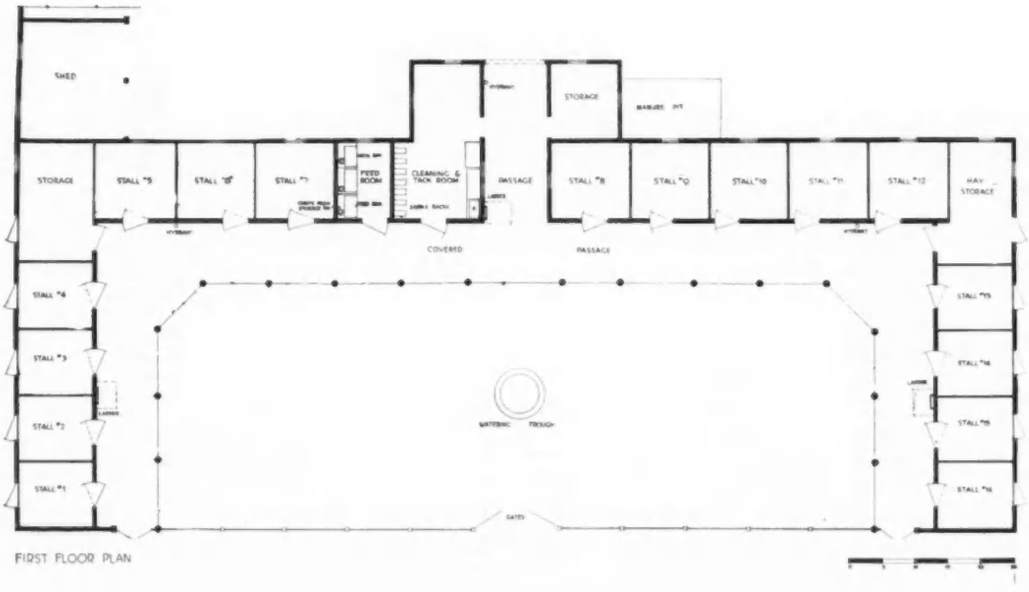
Tebbs and Knell



FIRST FLOOR PLAN

The stable is designed to flank a paddock on three sides.

ESTATE OF SEYMOUR KNOX AT AIKEN, SOUTH CAROLINA
PEABODY, WILSON AND BROWN, ARCHITECTS

DESIGN OF HORSE STABLES *

Although the automobile and truck have largely displaced the horse for utility purposes, country estates often have stables for riding horses or polo ponies. Many of the considerations involved in the design of cow barns apply also to the horse stables.

Paddock

When the available area permits and the number of animals warrants, the stables should be designed to flank a paddock on two or three sides. The paddock should have a south exposure and trees should flank the open sides to afford shade in hot weather. Doors between the horse stalls and the paddock are usually of the Dutch type.

Stalls

The horse stalls are generally arranged in single or double rows. The single row is said to be better, since it enables one side of the stable to be thrown open to the sun and air. Horses should not face any blinding light; for this reason, windows on stall walls are usually at a sill height of not less than 6′ 6″ to 8′ 0″, and often shaded by overhanging eaves. All windows should be screened and weatherstripped.

The partitions should always be so constructed that the air circulation is least obstructed. The stall should be wide enough to allow the horse to be turned around and led out. Where many stalls are required, a 5-foot width is customary. The sizes of box stalls vary from 10 by 12 feet to as large as 14 by 16 feet, depending on the size of the animals to be accommodated.

The stalls should be provided with hay racks, feed boxes, salt boxes and water bowls.

Because of advantages in cleaning and sanitation, the tamped clay floor of horse stables is being rapidly discarded in favor of wood blocks or composition cork brick. Walls should be easy to clean and should have a low heat transmission coefficient. Glazed brick is recommended by some architects; cement plaster, well painted, is also often used but in time becomes a heavy maintenance charge. As in the cow barn, projections should be avoided.

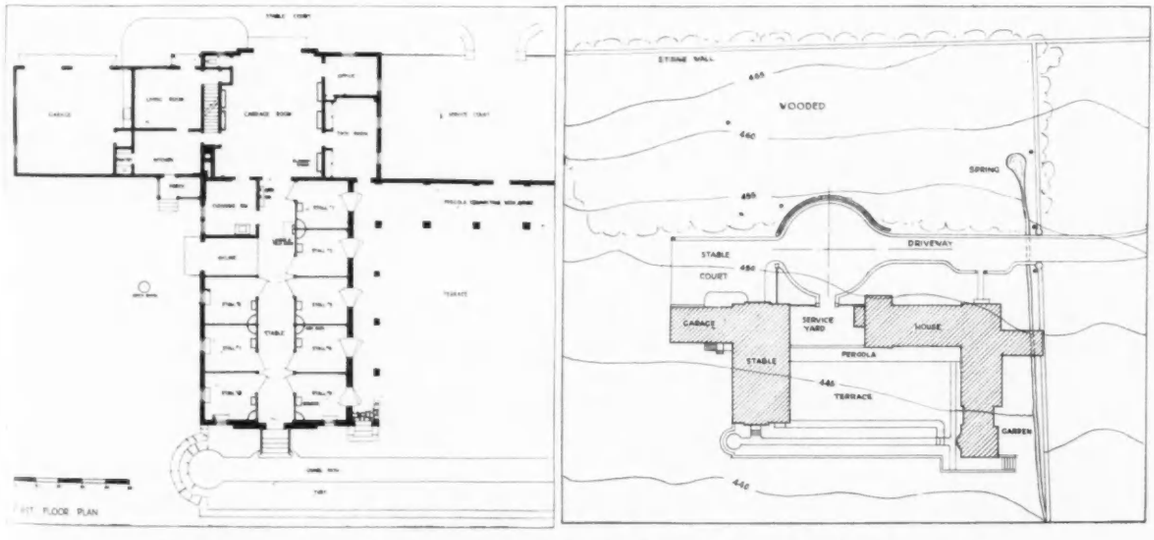
Drainage

Drains should be located on one side of the stall and approximately in the center of the dividing partition. A gravity flow is desirable and a sump pit should be avoided. At the high point of the soil line should be provided a flush-out which, when turned on, can maintain a constant flow in the sole of the soil line and thus prevent particles entering through the stall drains from settling and causing congestion.

Heating and Ventilation

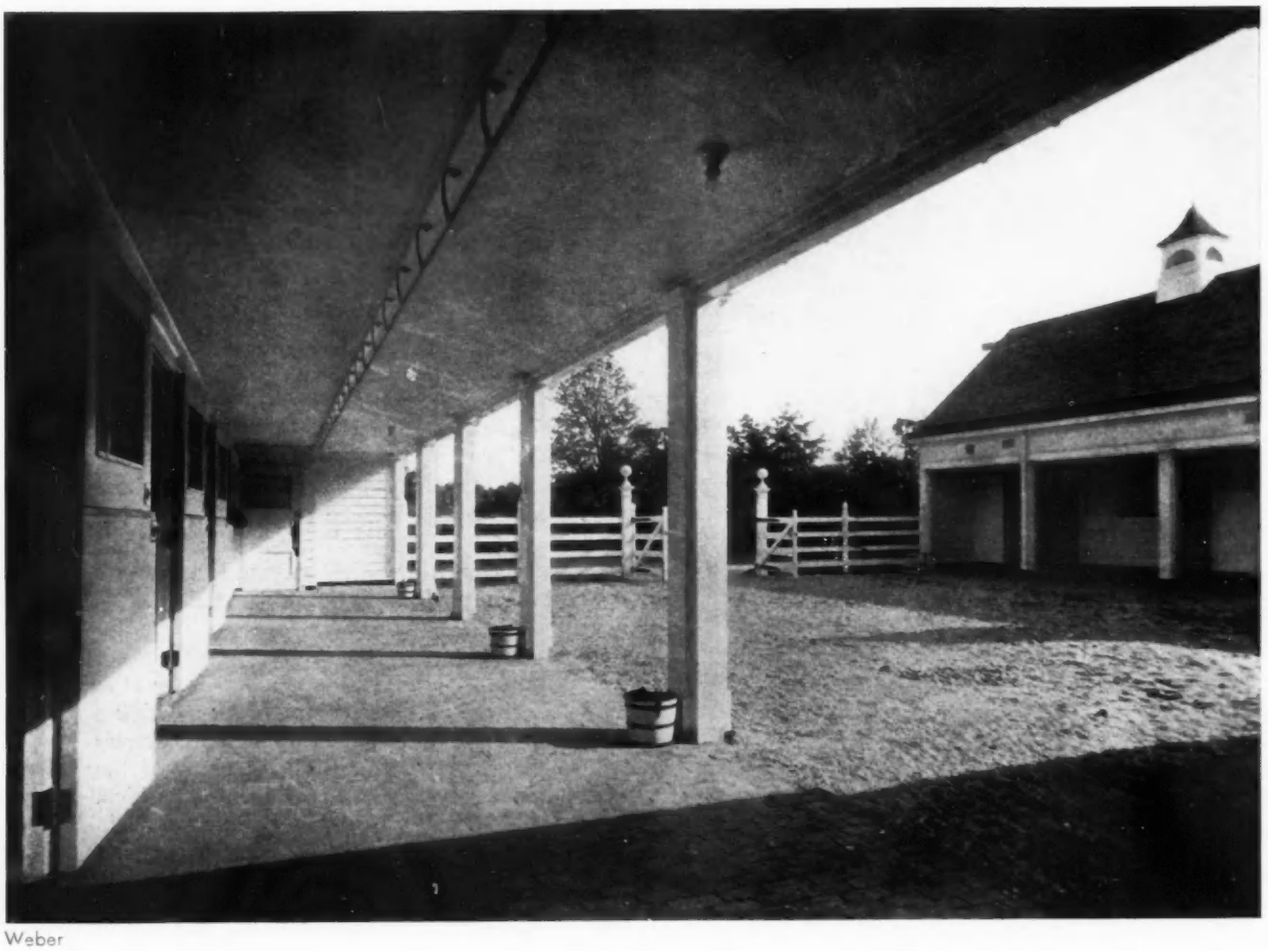
Horses need less warmth than cows, and consequently it is desirable to raise the ceiling height enough to provide from 1,000 to 1,500 cubic feet for each animal.

* Many of the planning recommendations in this study have been furnished by Mr. Daniel P. Higgins of the office of John Russell Pope, architect.

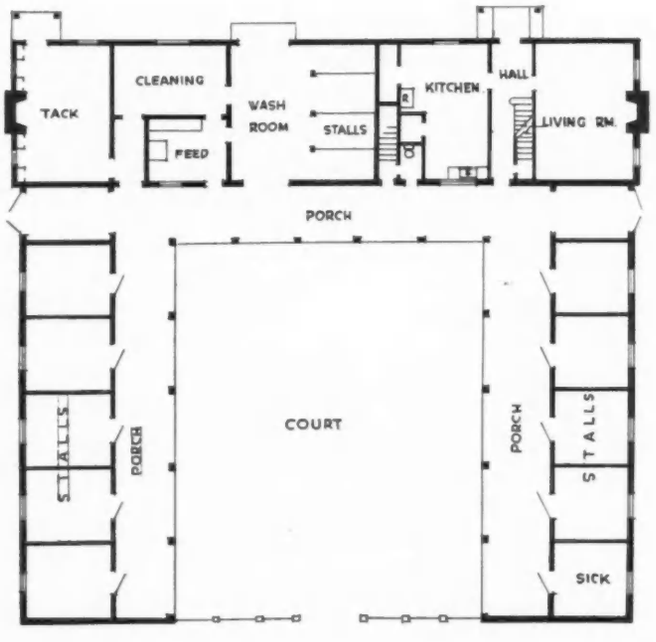


The pergola connecting the stable with the house is illustrated on page 373.

LANGHORNE GIBSON STABLE AT BEDFORD, NEW YORK
PEABODY, WILSON AND BROWN, ARCHITECTS



Weber



The wide porch gives adequate light and protects the eyes of the horses from any blinding glare. In winter it is inclosed with glass and used for exercising the horses. An overhead carrier track is used to remove litter.

In the washing room are provided stalls for drying the horses; these stalls are also used for visiting horses. Feed is stored in the loft over the feed room.

ESTATE OF HENRY A. COLGATE, NEW VERNON, NEW JERSEY
PEARSALL AND MILLS, ARCHITECTS

Heating is generally confined to areas outside the main stall area. In order to compensate for a temperature fall below the freezing point within the stable, an indirect system of heating could be designed for the stall area.

The ventilating problem is much the same as that of the cow barn. It is determined by the number of animals and the geographical location. If the stable is large, the system should be divided into several units in order to offer greatest flexibility, in controlling internal requirements. Control of all units should be centrally and easily accessible, and operated both electrically and manually. Fresh air intakes should be placed at two points of the quadrant at least in order to compensate for high winds. Hay and feed lofts should have separate mechanical ventilation.

Other Facilities

An enclosed wash room, approximately 14 by 16 feet in size, for the animals is a desirable feature. It should be draft-proof. Equally desirable is a segregated sick room of similar size.

A separate feed room will keep the hay dust out of the stable. It is not good practice to store hay over the horses where it will be contaminated by the stall fumes, the bedding may be kept overhead.

A movable harness rack is used to advantage; where more than eight or ten horses are stabled, a separate harness room is better.

A wagon room and tool room are often adjacent to the stables for convenience in storing farm machinery and supplies. This space should be amply large, and provided with shelves and pegs. The doors should permit easy access for trucking.

INCINERATION*

Many kinds of waste are found on the country estate —kitchen garbage, ordinary rubbish, vegetable matter, dry leaves, cuttings from trees and shrubs, poultry feathers, bulky stable refuse, and the like. Incineration, if used to dispose of these wastes, is involved in the planning of the service buildings.

Location

The sources of the main types of refuse should determine the incinerator location. If the principal refuse is wet garbage, the best location is near the kitchen or servants' quarters in the main house. If stable refuse and large quantities of vegetable matter are to be disposed of, the incinerator should be near the stables or service group so as to avoid the necessity of bringing this refuse near the living quarters.

On small estates the incinerator is frequently placed in the open. If the quantity of material to be handled is 300 pounds or more per hour, the incinerator should be housed, preferably in a separate building or, if this is not possible, in the stables or other service buildings.

Free-Standing Types

Incinerators placed in the open are usually designed to be charged from the top or through doors at the grate level. Stacks should be sufficiently high to clear the roofs of surrounding buildings; the area of the stack opening is dependent on the size of the incinerator and the quantity of material to be consumed. The top of the incinerator should be protected against rain and snow by a concrete slab.

Kernerator Company

Incinerator built into retaining wall.

ESTATE OF FREDERICK RENTSCHLER
WEST HARTFORD, CONN.

THOMAS J. DESMOND, LANDSCAPE ARCHITECT

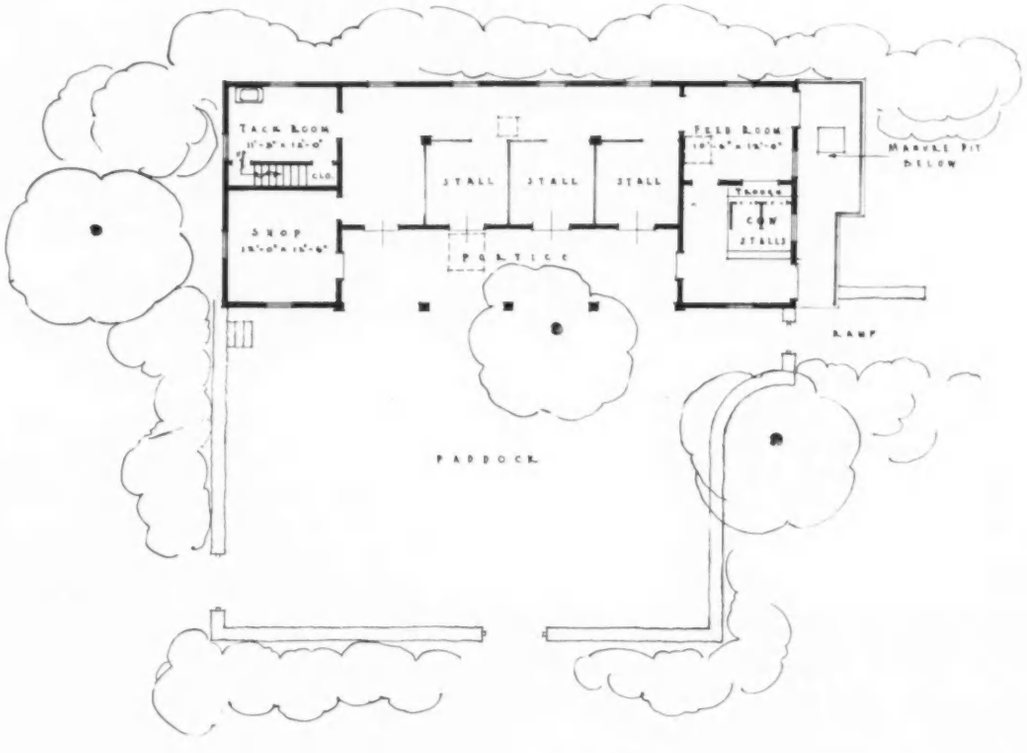
Inclosed Types

When the incinerator is placed in any of the service buildings, it is essential that the room inclosure be made fireproof. It is also advisable to feed the material through a top charging opening instead of through the fire doors. If a fireproof rubbish and garbage room is placed over the incinerator, it should be equipped with a sorting pen (steel or concrete) and drains to carry off free moisture to the sewage system; this room should also have facilities for washing the garage cans.

Leaves, paper rubbish and wood boxes are used to supply the necessary dry combustible material for burning the wet material. If the wet material exceeds 60 per cent by weight of the total refuse, it will be necessary to use commercial fuel (coal, oil, wood or gas) to maintain a temperature sufficiently high to deodorize the gases.

* These recommendations have been obtained through the courtesy of The Kernerator Company, Mid-West Incinerator Corporation and Rex Incinerator Company.

Van Anda



Cream-colored exterior of clapboards with dark green blinds and black-stained roof. Interior of stained pine.

DEAN S. EDMONDS STABLE AT GREENFIELD HILL, FAIRFIELD, CONN.
CAMERON CLARK, ARCHITECT

DESIGN OF DOG KENNELS*

For the estate where dogs are kept for the hunting season or where the owner is a fancier interested in breeding and training show champions, the kennel is an important part of the service group. The following checklist of planning requirements is for the kennel harboring a large number of dogs. The suggestions offered, however, are believed to be generally applicable to the country place with only one or two watchdogs.

Pens

Sanitation is of prime importance in the kennel. In this respect it should be remembered that a most effective—and perhaps the cheapest—disinfectant is sunlight. The kennel house should be planned so that each pen receives its proper share of space and sunlight.

A pen is usually occupied by one or two dogs. Its size varies according to the breed of dog: for small dogs, approximately 4 by 6 feet; for larger dogs, approximately 6 by 8 feet or even more.

Sliding hatches in the outer wall will allow the dogs to run back and forth into outside runways. If doors open into an inside corridor, the individual feeding and care of the dogs by attendants is facilitated. Receptacles for tags or cards on the pen doors have been found useful for keeping the records of dogs if they are sent away to shows frequently or otherwise require special attention.

To prevent unnecessary excitement and barking, the partitions between pens should be high enough so that the dogs do not see each other. A recommended height is 4 feet. Heavy wire mesh extending above the wood partitions will prevent the dogs from jumping over and yet allow a free circulation of air through the room. In some extreme cases wire screens are placed directly over the pens, approximately 4 feet from the floor, to prevent the dogs from jumping at all and thus developing muscles which would impair the correctness of their fronts and hindquarters for show purposes. Frequently it is desirable that the lower partitions be so constructed that they can be raised; in this way three or four pens can be combined into one large pen where the dogs can exercise in inclement weather.

Doors and partitions, if constructed of wood, should be sheathed with metal to prevent the dogs from ripping holes. This is especially necessary with terriers, who are inveterate diggers.

Windows should be designed not only to supply ample sunlight but also to prevent unnecessary drafts to which dogs are sensitive. If the windows are sash-hinged to drop open from the top and equipped with side shields, the current of air is sent directly up to the ceiling and distributed evenly and without draft. The ceiling should be arched slightly so that there will be no "dead corners" of stagnant air.

Floors should be impervious to dampness, easy to clean and comfortable to the dogs' feet. An asphaltic floor is good. Linoleum, which is often used for the corridors, could also be used in the pens, if sufficiently durable. Concrete, although easy to clean, is apt to cause callouses. The cracks in wood flooring are objectionable, although oak floors frequently have been used.

The floor should be covered with a light sprinkle of cedar sawdust; this makes cleaning easier and the clean pungent odor is said to prevent fleas.

Sleeping Boxes

Dogs, it has often been observed, generally like a box in which to curl up. Such boxes are usually provided in the pens and supplied with cedar shavings. To keep the dogs off a damp floor and away from drafts, the boxes should be raised about 6 inches. The boxes could be fixed to the wall by brackets and hinged so that they could be raised when the floor is being cleaned.

Runways

The exercise yards should be as spacious as possible. Usually the outside run corresponds in width to the inside pen.

One arrangement which has been found satisfactory has heavy wire fencing which incloses cement runs 6 feet wide graded slightly for drainage and extending 18 feet from the kennel house to outside gates. These gates open on a walk running the length of the kennel. On the opposite side of the walk are larger runs 100 feet long and 18 feet wide, each arranged to provide exercise for the dogs in three pens.

Shade trees are desirable. In case these are not available, a wooden platform 18 inches above the concrete will allow the dogs to rest either on top or underneath.

Fencing should always be fairly high. For dogs who are diggers the wire should be sunk below grade. A pipe railing placed 3 feet in front of the fence will serve to keep visitors from touching the dogs—a precaution sometimes taken to prevent any spread of disease from other kennels.

Exercising Room

In winter and rainy weather the corridors of the kennel house are frequently utilized for play space. In large kennels an exercising room is sometimes provided. There is no flooring; instead the ground

* Appreciation is expressed for the assistance of Arthur Frederick Jones, Associate Editor of the *American Kennel Gazette*, published by the American Kennel Club.

Gottscho

SERVICE BUILDING WITH DOG KENNELS
ESTATE OF R. P. STEVENS, GREENWICH, CONN.
JULIUS GREGORY, ARCHITECT

is covered liberally with sand and gravel. In the center a wooden block platform similar to those in use at bench shows is placed; this is useful in training puppies and older dogs to overcome any show-ring shyness. The exercising room should have an ample supply of sunlight.

Grooming Room

Separate space is usually provided for washing and trimming the dogs. The small tub should be mounted on a platform high enough so that bending over the tub is unnecessary and splashing is minimized. The concrete floor should be graded to a central drain. An electric dryer is used on small dogs; the larger dogs are usually turned out into the sunlight to dry.

Whelping Room

Dams should have separate quarters and runs. When a brood is expected, they are confined to pens screened completely to keep out insects and made as free from noise as possible. Older puppies are also given separate pens and sunroom. Inasmuch as pups are apt to tear up the grass too rapidly, their runs should be covered with rock slabs with the grass growing between.

Kitchen

Since the dogs are customarily fed in their pens, the place for preparing their food should be centrally located. The walls of storage bins should be sheathed with metal to keep out rodents. In large kennels the kitchens are equipped with stove, table, meat grinder, refrigerator and closets.

Club Room

A trophy room furnished with guns and sporting equipment and cases for ribbons and trophies makes a desirable place in which to entertain visitors.

Isolation Kennels

Quarters for sick dogs should always be an isolated unit. Usually dogs taken to shows are placed in quarantine before being groomed and returned to their own pens.

Colony Houses

Instead of pens under a single roof, the dogs are sometimes given individual houses and runs. With such an arrangement, there is said to be less chance for the spread of disease.

GREENHOUSES AND CONSERVATORIES *

Not only is the greenhouse a colorful showplace for displaying favorite flowers and plants at all seasons, but it also provides a sunny spot in which to potter about in leisure hours. The strictly utilitarian greenhouse is usually found in the service group. In a more intimate relation the greenhouse may be a feature in the formal garden scheme or even be made a part of the country house. The greenhouse may then be either a place where the owner indulges his horticultural hobby or a conservatory for blooming plants brought in by the gardener from a greenhouse elsewhere on the estate.

Location

Greenhouses vary in location, as well as in construction, according to the specific purpose for which they are intended. The choice of site depends logically on the owner's needs and the general landscape treatment.

For the utilitarian greenhouse in the service group, the gardener's cottage, if such exists, should be conveniently near and, if possible, directly connected. A service drive giving access to the workroom is desirable.

A conservatory should be planned to open directly into the living quarters for full enjoyment. In Europe this combining of conservatory and living quarters has resulted in several solutions making use of double windows skillfully arranged to facilitate the handling of plants from the outside. Such an arrangement is found at the Palmengarten in Frankfort, designed by Ernst May, where guests taking afternoon tea sit by alcove windows filled with rare flowers.

If roof terraces are available this space could be utilized satisfactorily for both conservatories and solariums. This possibility has been indicated by the use of lean-to conservatories for penthouse apartments, as well as by play spaces for children and roof solariums glazed with ultra-violet ray transmitting glass.

Desirability of Sunlight

Essentially the greenhouse is a practical means to an end—the growing of plants, flowers, fruit and vegetables. As such it may perhaps best be described as a part of nature in which sunlight, temperature and growing conditions are kept under control.

Obviously, if the greenhouse is to fulfill its purpose, any architectural treatment which obstructs the light is undesirable. Full exposure to the sun for all plants is a most vital consideration in planning the greenhouse. Especially during the winter, when the factor of light is limiting the growth of plants, it is highly desirable that sunlight of the greatest possible intensity be obtained.

Certain specialized greenhouses, such as palm houses and conservatories, do not require maximum sunlight. These may be planned accordingly.

In the days of heavy wood construction much study was given to the orientation of the greenhouse, but with the almost shadeless modern steel-frame construction this has become a negligible factor. The greenhouse may be extended in any direction, provided it does not come into the shade of other buildings.

Site Requirements

A site where rock, quicksand or water is likely to be encountered should be avoided. To reduce the costs of grading and filling, a level site, or one which can be made so readily, is preferable. If the only available site is on a steep grade, the greenhouse necessarily must conform to the contour of the land and yet retain its horizontal levels; this can be accomplished by several successive compartments, or parallel houses, graded on the inside and stepped up the hillside, with the boiler cellar placed at the lower end.

An exposure protected from the prevailing winds will conserve heat in winter. Trees to the north and west are good as windbreaks; if too near, however, they may menace the greenhouse by falling branches or cause objectionable shadows.

Greenhouse Units

Greenhouses are manufactured in standard sizes to meet usual requirements. For special conditions the stock designs are modified or special designs are made to solve the particular problem.

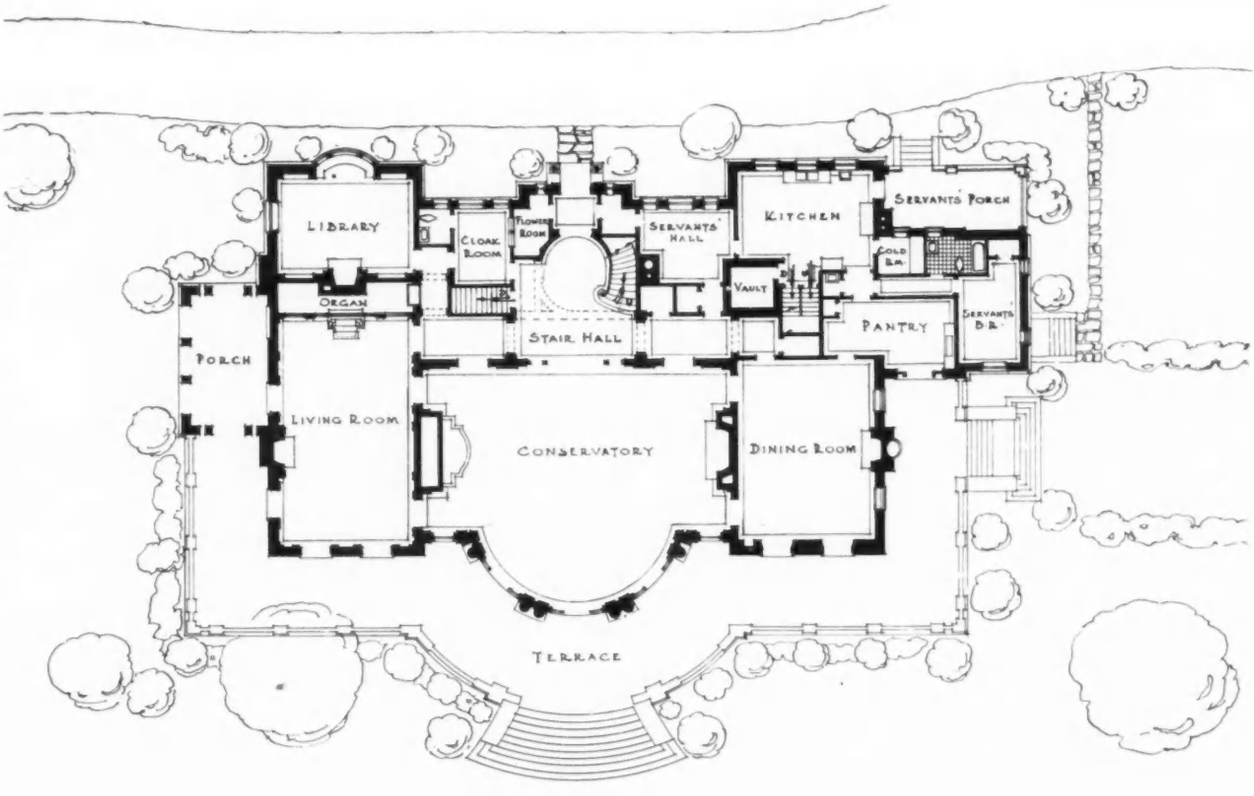
Standard lengths are determined by the glass spacing; these are usually in multiples of bays, extending from rafter to rafter. Standard widths are determined by the number of plant benches and walks and their convenient width for working and passage. Approximate widths are 10, 18 and 25 feet for two, three and four benches, respectively. In the more utilitarian types, where the owner and his guests are less likely to be visitors, the walks are narrower and the greenhouses correspondingly less wide.

Fruit and Special Compartments

With slight changes from standard greenhouse construction, fruit can be grown easily under glass.

* Much valuable assistance has been rendered by Mr. Henry P. Merrick of the Lord and Burnham Company and by the Boyce Thompson Institute for Plant Research in preparing this study.

Sanborn Studio



• FIRST FLOOR PLAN •

SCALE 0 6 12 18 FT.

The conservatory, 38 feet wide and 50 feet long, faces south. The flowers and plants are easily seen from all the living quarters of this country house.

ESTATE OF WILLIAM F. RASKOB, NEAR WILMINGTON, DELAWARE
E. WILLIAM MARTIN, ARCHITECT

The exotic fig and pineapple flourish if given a solid earth bed. Most popular of glass-grown fruit are grapes, peaches and nectarines.

Grapes require a separate compartment; peaches and nectarines thrive well together. To extend the bearing season of these fruits, the greenhouses can be divided into several compartments; after a dormant period induced by freezing or withholding water, these compartments are started into activity successively for early or late crops. Preferably, the compartments should be at the end of the greenhouse range where they can be easily closed off and where it is not necessary to pass through them in order to reach other compartments.

In graperies and peach houses all benches are removed. A concrete floor is provided 4 feet below grade to contain the specially prepared soil and to confine the roots. Supporting wires are strung under the roof for grapes; peach and nectarine trees are trained on vertical trellises extending across the house.

Melons and tomatoes and cucumbers (except in commercial greenhouses) are grown in plant benches. The vines are supported by wiring similar to that used for grapes, and additional support of individual net bags given to the melons.

Palm houses frequently are conservatories where tropical specimens and blooming plants are displayed the year round. In other cases they are purely plant houses, benched in the center as well as on the sides, but built higher than other units in the greenhouse range.

Slat shading is required for orchids. The slats should not be laid flat on the roof, but elevated above, with an air space between. These rare flowers are usually grown in an extremely humid atmosphere.

Benches

Plant benches are variously constructed, ranging from those with galvanized steel frames, slate sides and porous tile bottoms to those built entirely of cypress. The benches in orchid houses are usually arranged in steps so as to obtain the best growing conditions. Tables are used in palm houses and conservatories to receive potted plants, sometimes similarly arranged. Hose bibs should be placed at intervals in the greenhouse so that a 25-foot length hose can be used for watering the plants.

Glass

According to the Boyce Thompson Institute for Plant Research (Yonkers, New York), the best glass for greenhouses, so far as can be determined, is ordinary glass. In order to obtain normal plant growth, neither end of the solar spectrum, i.e., neither the red light nor the blue light, should be shut out.

The best glass for greenhouses during the winter months when light intensity is low, the Institute states, is one which has the highest possible transmission in the visible spectrum. Thin glasses have an advantage in this respect but also a disadvantage in being more easily broken by hailstones, snow and other natural causes.

Heating

A greenhouse heating system must be capable of maintaining the proper temperature for the crops to be grown; it must be economical in fuel consumption and not require too close attention; and it must be adapted to the fuel used.

The usual method of heating greenhouses on private estates is the gravity hot-water system. Horizontal pipe coils are installed under the benches and proportioned for the specific temperatures desired in the various compartments of the greenhouse. The control of heat necessitated by changes in the outside weather is accomplished thermostatically or by hand valves. The coils are connected by mains, placed in trenches where required; these lead to the boiler which should be placed in a cellar, usually located under the workroom. When a cellar cannot be excavated, a pit several feet deep and an overhead main system may be substituted, but this is not recommended.

If oil or gas is used, that part of the cellar under the workroom which would otherwise be used for coal storage can be utilized for general storage or for mushroom growing. For the latter a partition should separate this space from the boiler cellar; a line of heating pipe should then be placed around the walls and a mushroom bench, similar in construction to the greenhouse benches but two or three tiers high, be installed.

Ventilation and Shading

Abundant ventilation is necessary to furnish proper circulation of air and to reduce the inside temperature in warm weather. Each side of the greenhouse roof should have a continuous line of ventilating sash hinged to the ridge. Side ventilation is accomplished either by vertical sash extending from sill to gutter or by panels set in the walls; the sash are preferred as admitting a more generous current of air. Each line of roof and side ventilation is controlled by mechanical operators.

Slat shading is used in summer to further moderate the temperature and to protect the plants from the intense rays of the sun. The slats lie flat on the glass roof, except for orchid houses, and may be rolled up conveniently as desired.

Humidity

Much moisture is usually present in the earth under the plant benches since the plants are watered at the roots.

Air conditioning has been used by the Boyce Thompson Institute in several greenhouses in order to control the temperature and humidity for comparison of plant growth. For ordinary growing results indicate that the practical value of such control is doubtful. Humidity can be increased sufficiently, the Institute reports, by the practice of spraying with a hose at frequent intervals.

Die Form

By means of double fenestration, the end wall of this house is utilized as a conservatory. The outer windows are electrically operated and can be lowered for ventilation.

TUGENHAT HOUSE IN BRUNN
MIES VAN DER ROHE, ARCHITECT

Potting Room

The workroom is an indispensable adjunct of the greenhouse. In its simplest form it may be part of the greenhouse, shut off from the growing compartment by a glass partition and containing only the essential requirements—a potting bench with soil bins underneath, a sink, a pot rack and closet, and stairs to the cellar.

In more extensive greenhouse ranges the workroom may be expanded to include an office for the superintendent or gardener, perhaps even sleeping quarters and toilet facilities.

Hotbeds

The usefulness of hotbeds and cold frames as greenhouse adjuncts should not be ignored. In them can be grown seedlings for spring planting, winter protection can be given to semi-hardy plants and the greenhouse capacity further supplemented.

The construction of hotbeds and cold frames is similar, except that the former contain heating pipe. A row of frames may be partitioned and valved so that they may be used for either purpose as desired. If built directly against the greenhouse wall, so that this becomes the rear wall of the frames, some saving in costs may be obtained, but the convenience of a walk in between is lost. The beds should preferably slope to the south; the concrete walls should extend below the frost line.

Future Expansion

To anticipate the demand for a larger quantity and variety of products, the greenhouse should be planned, from the first, for possible expansion in the future. This consideration will necessarily be a factor in selecting the site and also in determining the size of the boiler cellar, flues, trenches and other details.

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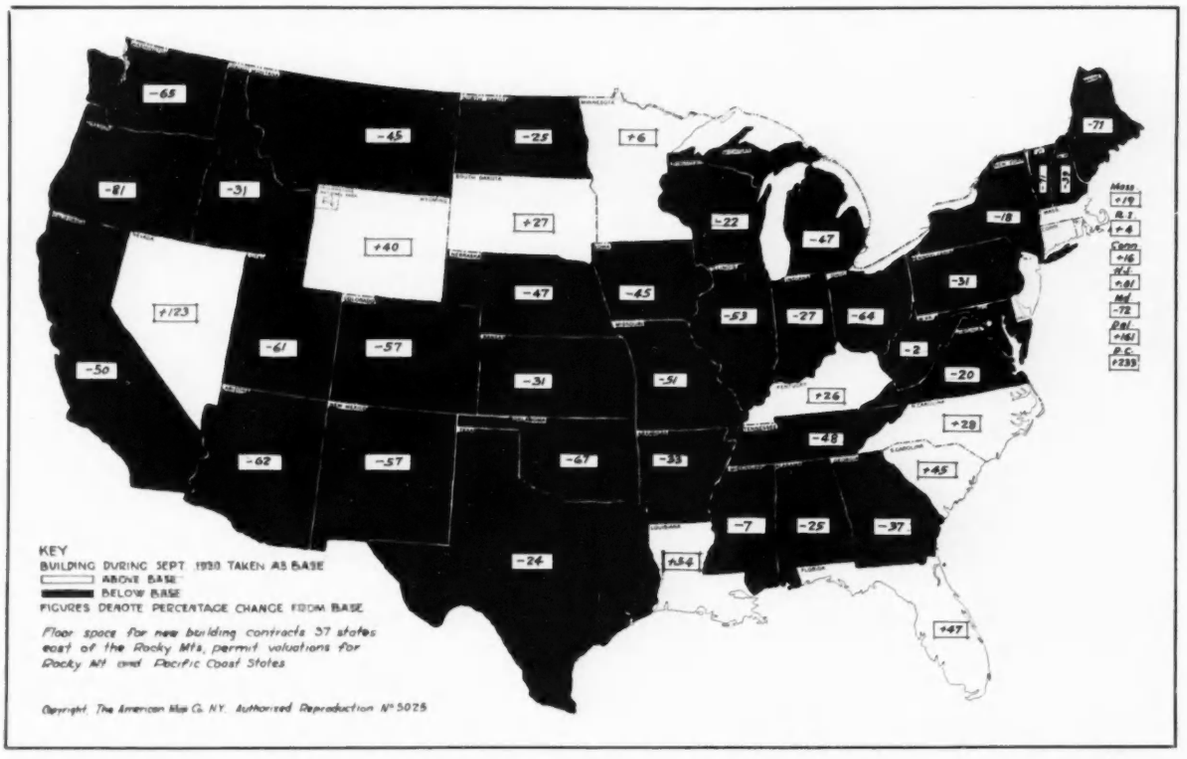
GARAGES AND RECREATIONAL BUILDINGS

Technical News and Research studies analyzing the planning requirements of other types of other types of service and recreational facilities have appeared in the following issues of THE ARCHITECTURAL RECORD:

GARAGES—February 1929, pages 177-198; January 1931, pages 52-57.
SWIMMING POOLS—January 1929, pages 67-87.
TENNIS COURTS—November 1929, pages 496-500; January 1931, pages 18-20.
SQUASH COURTS—November 1929, page 500; August 1931, pages 127-140.



The September building map showed 13 states east of the Rocky Mountains where current building contracts, on a floor space basis, were on a higher level than in September, 1930. These states were Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, District of Columbia, North Carolina, South Carolina, Florida, Kentucky, Louisiana, Minnesota, and South Dakota. In August only nine states showed contract gains over August, 1930. Of the states showing increases in September, only Massachusetts, Rhode Island, the District of Columbia, and Minnesota showed gains in August.

BUILDING TRENDS INDICATED BY THE FEDERAL CENSUS—Part 5

By L. SETH SCHNITMAN

EDUCATIONAL BUILDINGS

In the light of rising standards of living it seems that the demands for new educational facilities are almost limitless. This would probably be so if population growth were assured at or near a constant rate. But when a large decline in the rate of growth not only impends but is actually occurring, as at present, then such a change must ultimately have a large effect on new demands for schools and colleges.

Loss Expected in Graded School Construction

Between 1920 and 1930 there was an actual loss in the census of children under five years of age. This is the age group that by 1940 will have completed, for the most part, its graded school education. This is the group that constitutes the demand side of the graded school construction equation. It seems reasonable, therefore, to state that such extension as may occur in the future in new graded school facilities must rest more largely upon replacement considerations than ever before. Especially will this be true if any further declines occur in the birth rate. By 1945 the survivors in this age group, for the most part, will have completed their secondary education; thus, our high schools and junior high schools likewise are rapidly approaching their points of maximum expansion.

The loss that appears imminent in graded school construction will to a large degree be counteracted by gains in junior high schools and high schools. But as between primary and secondary schools, large differences exist in planning, construction, facilities and equipment.

Effects of Population Shifts

School construction will likewise be affected by further population shifts, i. e., from country to

city, from city to suburb and to a much less degree from city to country. Striking differences in demand for primary and secondary schools will occur as between our largest cities and our smallest cities, as between the cities and suburbs where current population growth rates will be maintained and even extended and centers where population growth rates will be either curtailed or become negative. Of course radical changes in our primary and secondary school systems might occur over the next decade or two, which would materially alter the implications for new school building now apparent in the population figures. The terms of study might be materially extended, for instance, although this appears unlikely for the next few years at least. Any extension in education will probably occur in the outer age limits, more especially affecting our colleges and professional schools.

School Population Ratios

According to the 1930 census, approximately 5,000,000 children under 14 years of age were attending school in the 93 cities having 100,000 or more inhabitants. This group, for all practical purposes, may be considered as the graded school population of those cities where incidentally approximately 30 per cent of the entire population of the country was centered. This school population group represented about 65 per cent of the total school-attending population of all ages in those same 93 cities.

In the 13 largest American cities, i. e., those having 500,000 or more inhabitants, approximately 2,800,000 children under 14 years of age were attending graded schools of one sort or another in 1930. This represented 13.4 per cent of the total population of those same cities and contrasts with a primary school-attendance ratio of 13.8 per cent for the 100,000 population group of American centers as a whole. To put the contrast in yet another way, perhaps more strikingly, the 80 cities reporting between 100,000 and 500,000 inhabitants in 1930 showed 14.2 per cent of their combined population attending the primary schools as against only 13.4 per cent in our 13 largest cities. This is reflective of the effects of population concentration in our largest cities, especially concerning the adult-age brackets.

At the same time the primary school-attending population in our 13 largest cities represented 68 per cent of the total school-attending population of those cities as contrasted with a parallel ratio of 65 per cent for the 100,000 group of American cities as a whole. Thus, for the 80 cities of between 100,000 and 500,000 inhabitants, 63 per cent of the total school-attending population was in the primary school-age bracket as against 68 per cent of cities of more than 500,000 inhabitants. This, besides reflecting perhaps a more perfected primary school system in our largest cities, indicates to a great degree the need for further concentration on the perfection of our secondary school systems.

Effects of Employment Opportunities on Education

It is in these cities where opportunities for commercial and industrial employment have in the past particularly attracted our children of school age, especially those of high-school years. With further extension in the efficiencies of production and distribution it is to be expected that the opportunities for full-time employment of children of high-school age will grow materially smaller and that in consequence longer periods of schooling will become the order of the day. In this transition a relatively large demand for secondary schools of various descriptions should manifest itself in our largest cities for the next few years.

As respects our cities of 100,000 to 500,000 inhabitants, it appears probable that the ratio of children attending primary schools to total school attendance may not show for 1940 any substantial change from that recorded for 1930 but for our 13 largest centers it is reasonable to expect that the 1930 ratio of 68 per cent will show a substantial reduction. To put it the other way, the ratio of 31 per cent for school attendants over 13 years of age should show a material expansion.

Decline in Relative Importance of Lower-Age School Attendance

In 1920 approximately 3,850,000 children under 14 years of age were attending school in the 93 cities which in 1930 reported 100,000 or more inhabitants. These school children represented 73 per cent of the total number of persons of all ages attending school in those same cities. In the thirteen cities which in 1930 showed populations of 500,000 or more inhabitants, approximately 2,250,000 children under 14 years of age were attending school in 1920; in this case the children of primary-school attendance represented 76 per cent of the total school-attending population of those cities.

In each instance, therefore, a striking decline has occurred between the census years 1920 and 1930 in the relative importance of school attendance among children under 14 years of age, and this tendency may be expected to continue, particularly in our largest cities.

Fairly High Level Indicated for School and College Construction

Schools and colleges constructed during the ten years, 1921-1930 inclusive, in the thirteen largest cities were valued at approximately $950,000,000. During this same period $9,700,000,000 worth of new residential building of all descriptions was constructed in those same centers. Thus, for each $5,000 of new residential building approximately $500 was expended on new schools and colleges. This relationship may be expected to hold approximately for the decade that will end with 1940. But the total dollar volume of new school and college construction will in all likelihood fall

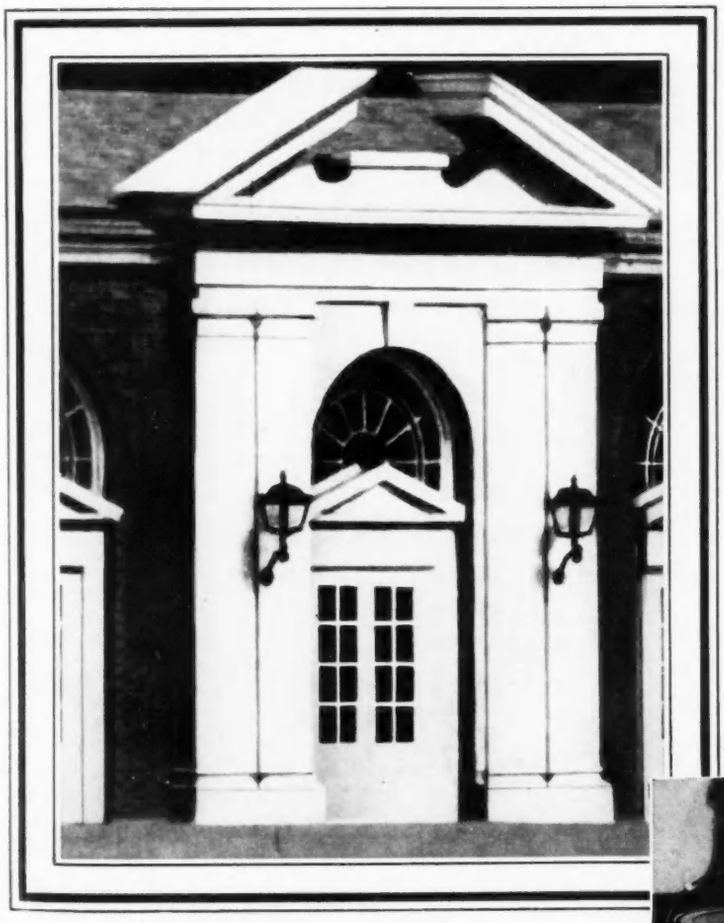
(Continued on page 69 advertising section)

ARCHITECTS: ROBERT O. DERRICK, INC., DETROIT

The Edison Institute

FOUNDED BY **Henry Ford**

selects this Distinctive Paint



Public benefactor, manufacturing genius, patriot. That is Henry Ford. Now again he has earned high praise from all.

In his magnificent Edison Institute and Museum at Dearborn . . . dedicated at the Edison Light Jubilee in 1929 . . . he has collected many dramatic and historic relics of early America.

Visitors to these beautiful buildings of Colonial architecture often remark upon the handsome whiteness of the exterior trim . . . an effect attained by the use of Outside Barreled Sunlight.

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This supreme white paint is the crowning achievement of twenty years' specialization on white paint exclusively . . . the gratifying result of determination to produce the very finest exterior white paint we could make. You will be amazed at the rich, deep lustre, the satin smoothness of Outside Barreled Sunlight.

Outside Barreled Sunlight was developed by an adaptation of the famous Rice Process that produced the handsome, washable Interior Barreled Sunlight used on walls and woodwork in thousands of fine buildings.

Like Interior Barreled Sunlight, Outside Barreled Sunlight is an all-oil product, easy to tint with ordinary oil colors.

You will find our catalog in Sweets—but for your own files we would like to send you our booklet, "The Whitest White House in Town."

Write to U. S. Gutta Percha Paint Co., 22-K Dudley Street, Providence, R. I. Branches or distributors in all principal cities. (For Pacific Coast, W. P. Fuller & Co.)

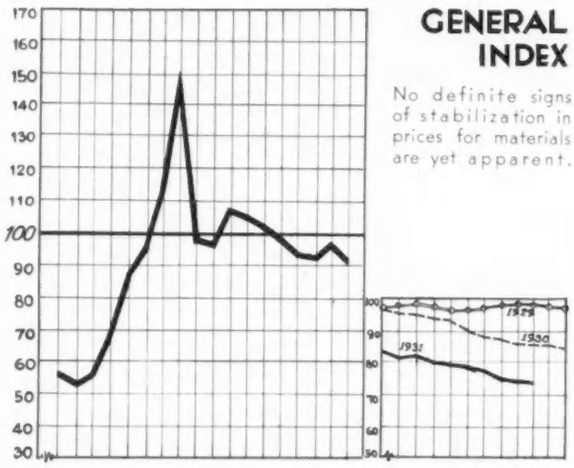
In cans, 5-gallon buckets and large drums. Quantities of 5 gallons, or over, tinted to order without extra charge.

Outside Barreled Sunlight

REG. U. S. PAT. OFF.

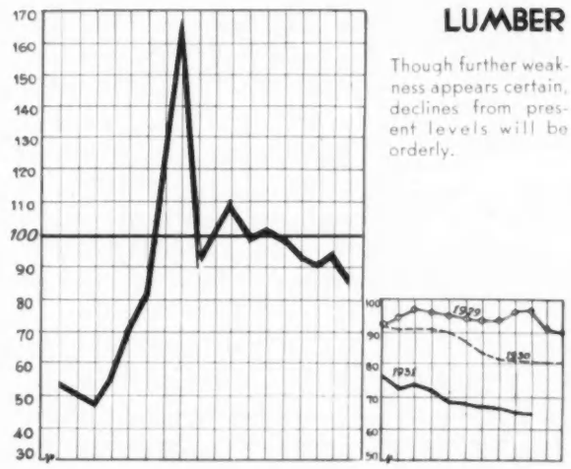
WHOLESALE PRICES FOR BUILDING MATERIALS

1926 Monthly Average—100



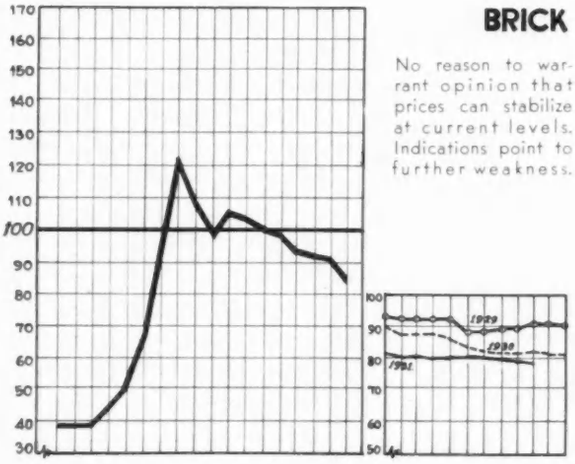
GENERAL INDEX

No definite signs of stabilization in prices for materials are yet apparent.



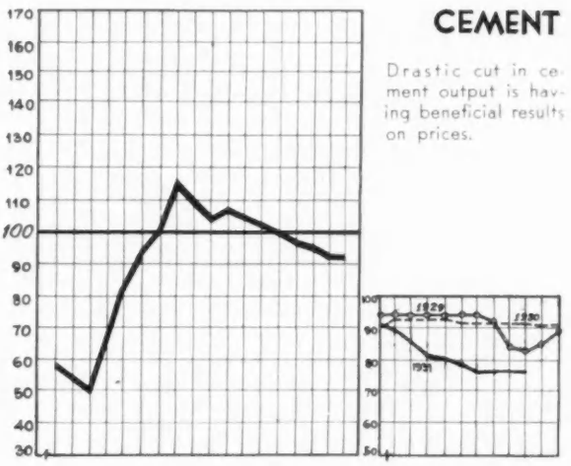
LUMBER

Though further weakness appears certain, declines from present levels will be orderly.



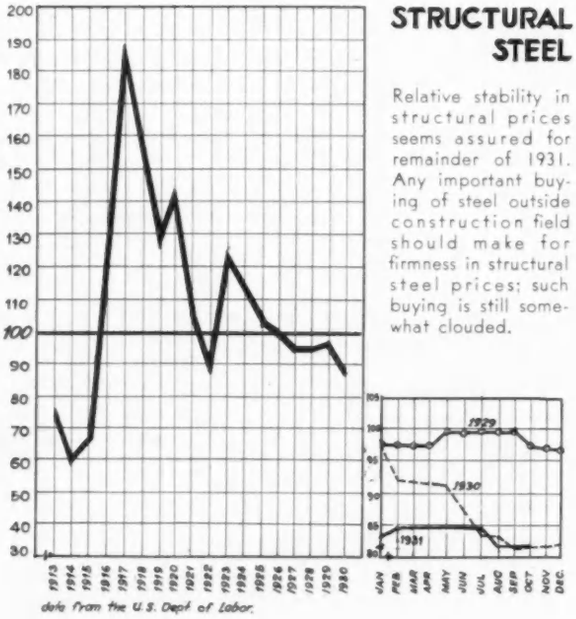
BRICK

No reason to warrant opinion that prices can stabilize at current levels. Indications point to further weakness.



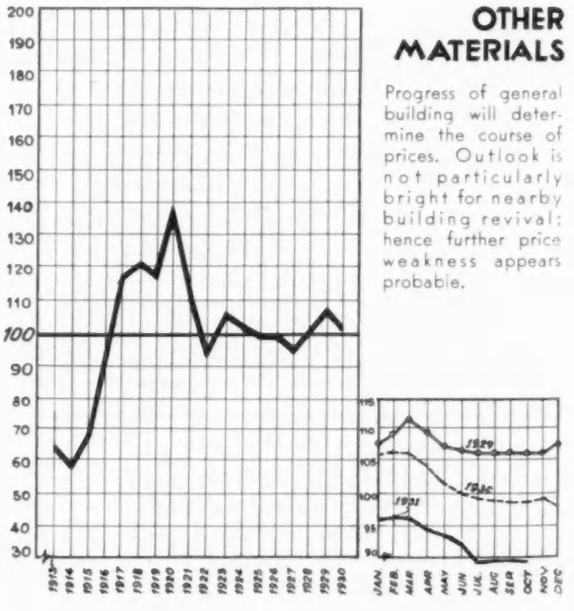
CEMENT

Drastic cut in cement output is having beneficial results on prices.



STRUCTURAL STEEL

Relative stability in structural prices seems assured for remainder of 1931. Any important buying of steel outside construction field should make for firmness in structural steel prices; such buying is still somewhat clouded.

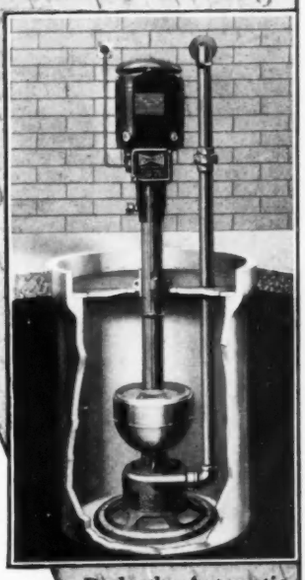


OTHER MATERIALS

Progress of general building will determine the course of prices. Outlook is not particularly bright for nearby building revival; hence further price weakness appears probable.

data from the U.S. Dept of Labor.

when it RAINS *and* RAINS *and* RAINS



Penberthy Automatic Electric Sump Pump

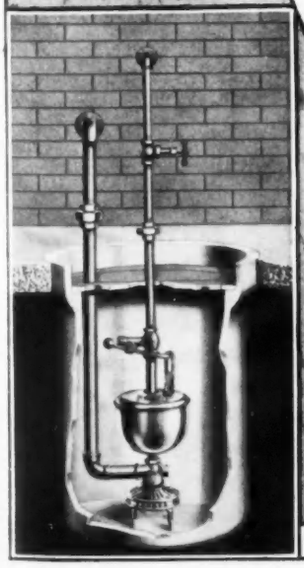
A Dry Basement

ALTHOUGH this home was built in a new subdivision that is without sewerage facilities, its owner will never be troubled with a wet basement, no matter how hard or how long it rains. The architect had it equipped with a Penberthy Pump that handles all basement seepage and drainage quickly and quietly.

Both the electric and water operated pumps are immune to corrosion . . . they are copper and bronze throughout. Both are automatic and thoroughly dependable under the most severe operating conditions; they are economical of electricity and water power. Both have a minimum space requirement and are easy to install.

Penberthy Pumps are quickly available from the stocks of leading jobbers throughout the country.

Penberthy Automatic Cellar Drainer (Water Operated)



PENBERTHY INJECTOR COMPANY
DETROIT
Canadian Plant Windsor, Ont.

Established in 1886

PENBERTHY PUMPS
PREVENT FLOODED BASEMENTS

PENBERTHY PRODUCTS

(Continued from page 392, editorial section)

substantially below that recorded for the preceding decade, unless further large extension in education and its facilities, particularly for adult education, as well as large replacement of existing old, outmoded, hazardous facilities is undertaken during the interim.

For the United States as a whole new schools and colleges erected during the decade ended 1930 showed an estimated contract total of $3,750,000,000. Thus in the country outside of our 13 largest centers new schools and colleges amounting to $2,800,000,000 were constructed during the years 1921-1930. In this instance the ratio between residential building and schools and colleges is $5,000 to about $1,000. It would appear then that the construction of school and college facilities in our smaller centers for the current decade at least will maintain a fairly high level, since it is in these areas that the child is still of large importance in dictating demands for educational facilities and it is here that the population growth rate will probably show less decline than in our largest cities.

Increase in Adult Attendance Indicates Need for Additional Facilities

The census figures on adults attending school are particularly arresting. Between the years 1920 and 1930 a gain of 243 per cent was shown for the 93 principal cities in the number of adults over 21 years of age attending school. For the 13 largest cities alone a gain of 262 per cent was scored in this age group while for the 80 smaller centers, those of between 100,000 and 500,000 inhabitants, the increase, though important, was only 175 per cent. For the most part these figures on adult school attendance embrace colleges and professional schools, though of course some adult night school attendance in primary and secondary schools is included within the data.

The average span of work has been materially shortened by the further inroads of mechanization and technology. Employers are choosing their employees between the ages of 25 and 45. Because of this we may expect to see further extension in educational requirements and facilities. In this our colleges and universities will play a large part.

COUNTRY HOUSE CONSTRUCTION TRENDS

By L. SETH SCHNITMAN

Although partaking of the general retrenchment in building, the construction of dwellings, with contract values $20,000 and above, is still proceeding on a level substantially above the depression level of 1920-1921. It is this class of dwelling in which the architect figures largely, inasmuch as dwellings of contract values of $20,000 or more are for the most part order-designed and custom-built. These are the dwellings that presume individual family incomes of at least $7,500 a year, though doubtless during the inflationary days families with incomes as low as $5,000 were embraced in this market.

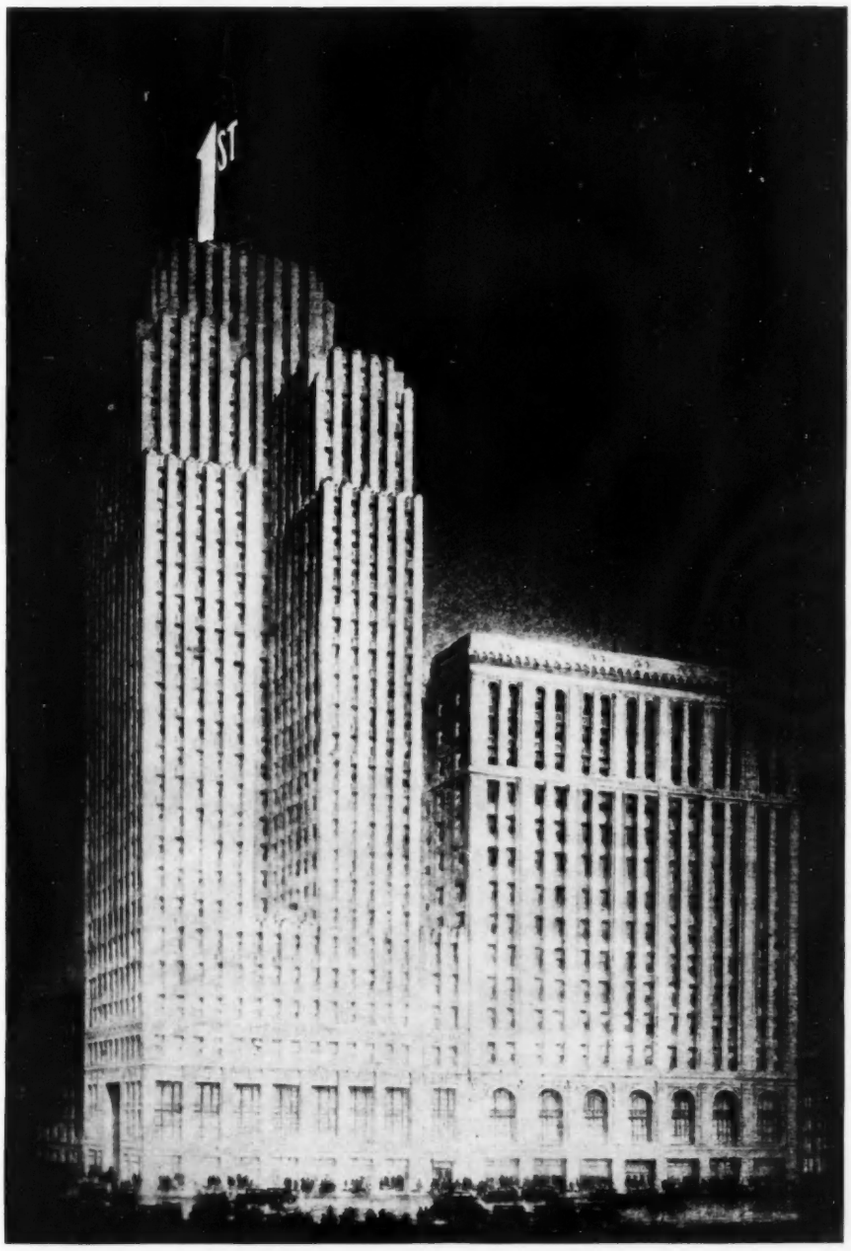
For the decade which ended in 1930 the total value of all new one- and two-family houses erected in the United States, as based upon data from F. W. Dodge Corporation, approximated $12,400,000,000. Of this amount only about $1,800,000,000 represented the value of dwellings of $20,000 or more per project. Thus, only 14.5 per cent of all new one- and two-family dwellings erected during the years 1921-1930 showed contract values of $20,000 and over.

Relation to Incomes

According to the statistics of income, based upon individual income tax returns for the calendar year 1928, only 12.81 per cent of the total number of individual returns showed incomes of $8,000 or more for that year. Returns on incomes above $7,000 represented 15.45 per cent of the total number of individual tax returns for the same year. Thus, if we may use the year 1928 as typical, we find that within the range of 12.81 per cent and 15.45 per cent, representing as they do, respectively, income groups above $8,000 and above $7,000, we find fairly close agreement with the ratio of 14.5 per cent representing the relationship between dwellings of $20,000 and over and total one- and two-family dwelling construction during the last decade. It may be said with some certainty that, although in the case of dwellings of $20,000 and more there may have been some over-building, for the most part such over-building as occurred in one- and two-family houses probably took place in dwellings of the lower cost-brackets.

For dwellings of $50,000 and over, the type which largely represents country homes, new construction during the decade, 1921 to 1930, approximated $550,000,000. This was somewhat more than 30 per cent of the total for dwellings of $20,000 and over, and only about 4.5 per cent of the total one- and two-family house construction

Reflecting *the* Dignity *of* Established Rank



FIRST NATIONAL BANK BUILDING
ST. PAUL, MINNESOTA

Architects: Graham, Anderson, Probst & White, Chicago, Ill. *General Contractors:* Paul Steenberg Construction Co., St. Paul; *Plumbing & Heating Contractors:* Hankee Heating Company, St. Paul.

The First National Bank Building in St. Paul was designed to house appropriately the oldest and largest financial institution in the city and one that has been identified with the development of the Northwest from pioneer days until now. Architecturally and practically, so the men responsible decided, it must be representative of all that is finest and most advanced in such buildings. It was conceived and erected with this in view—thirty stories high, with a skeleton tower reaching up a hundred feet above its topmost roof, graceful in outline, substantial in structure, at the heart of the business district, dominating the sky line as seen from any direction. The conveniences of the building within are as praiseworthy as the appearance without; and all its equipment has been chosen with a view to the requirements of the most exacting users. For unfailing and satisfactory service in its major uses of pipe, the "First" Building is fitted with NATIONAL—

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A NOTABLE STRUCTURE

BANK OF MANHATTAN

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NEW YORK

Another notable New York structure for which the Robert W. Hunt Company was retained for the inspection of all structural steel.

H. C. Severence was the Architect, Purdy and Henderson the Steel Engineers, and Starrett Bros., Inc., the General Contractors.

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as measured by contract values. Income tax returns for 1928 showed only 5.42 per cent of the total with individual incomes above $15,000, while returns on incomes of $20,000 and over represented only 3.68 per cent of the total individual tax returns. Here, the ratio of 4.4 per cent for dwellings of $50,000 and over falls between the income-group ratios represented by incomes of $15,000 and up and $20,000 and up, i. e., 5.42 per cent and 3.68 per cent.

Singularly, dwellings of $50,000 and over showed their peak in the year 1929, largely paralleling the inflationary peak in business. This is the only group of dwellings that showed a 1929 peak; all other one- and two-family dwellings, broken down by cost-groups, showed their peaks in 1928, when speculative and development housing was of greatest importance.

Forecast of Higher-Cost House Construction

In view of the long-continued depression in business it appears that no class of dwelling construction will be spared from further retrenchment. However, dwellings of $100,000 and over and those of $50,000 and over will probably show construction totals for the year 1931 as a whole well above the depression levels of 1920-21. Even for the year 1932 it appears that dwellings within these cost groups will be able to stay above 1920-21 levels. For the other lower cost-brackets, particularly those below $10,000, the 1920-21 levels will be broken through during 1931. For the first nine months of 1931 new dwellings erected at contract values of $50,000 and over showed a loss from the same period of 1930 approximating 50 per cent. This decline will probably approximate conditions for the full year. For dwellings of $20,000 and more the nine months' loss from the corresponding period of 1930 was only about 40 per cent. Here, too, this percentage will probably approximate the full year's record.

The outlook for 1932 for dwellings of $50,000 and more is clouded considerably by the present state of business. If business conditions show the slightest signs of improvement it appears safe to state that this class of dwelling construction will be able to maintain itself above the 1921 depression levels.

COLUMBUS MEMORIAL COMPETITION AWARDS

The announcement of J. L. Gleave of England as winner of the first prize in the Columbus Memorial Competition reaches THE ARCHITECTURAL RECORD as this issue goes to press. The report of the jury of award, signed by Eliel Saarinen, Frank Lloyd Wright and Acosta y. Lara, was sent by Mr. Wright from Rio de Janeiro. Photographs of the prize-winning designs will appear in the December issue.

The report of the jury: The general idea of the

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Equipped Throughout with RUSSWIN Hardware

In this new Waldorf-Astoria designed by Schultze & Weaver, Architects, and built by Thompson-Starrett Co., Inc., Contractors, it was our privilege to fabricate the 42 special designs done in the French, English and Modernistic Periods to harmonize with this outstanding achievement. » » » »

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RUSSWIN
RUSSELL & ERWIN
DISTINCTIVE HARDWARE
Hardware that lasts — Base Metals of Bronze or Brass

RUSSELL & ERWIN MANUFACTURING COMPANY
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New Britain, Connecticut New York Chicago London

An Auxiliary Electric Heater a Necessity

PROMETHEUS ELECTRIC CORP.
12 Ninth Avenue
New York, N. Y.

In the Spring and Fall, before and after the boiler is fired—and before the heat comes up in the morning or after the fire is banked—those are the times the Prometheus Electric Heater is welcomed in the bathroom. That's when the thoughtfulness of the architect who specified the Prometheus is praised.

The Prometheus is built into the wall, out of the way. The three-heat switch permits easy heat regulation.

PROMETHEUS

Bathroom Heater

is not a fire hazard. Prometheus Heaters are approved by the National Board of Fire Underwriters.

This attractive grilled-front cast-iron heater is furnished in various colors of vitreous porcelain to harmonize with the color scheme of the room.

The Monel guard which protects the heat element cannot crack or chip like porcelain grilles.

Backed by thirty years of experience. Write for catalog or mail the convenient coupon.

PROMETHEUS ELECTRIC CORP.,
12 Ninth Avenue, New York, N. Y.
Without any obligation on our part you may send your catalog on built-in heaters.

Name .....
Address .....
City ..... State .....

judges of the first competition was to secure ideas to be developed in the final competition. But it was not expected that the ten competitors winning the first prizes would restrict themselves to the ideas they submitted. Some of the ten prize competitors have made no new contributions, others have changed their schemes entirely. Some have grown far beyond the former conception. Nevertheless, except in the employment of one great modern resource, artificial light, none among the ten designs now submitted in final competition expresses what previous civilizations with more primitive resources could not have better expressed.

Although expressions of new resources in construction characterizing our twentieth century are absent, one design, making wonderful use of light, does take refuge in a directness, simplicity and force worthy the great monuments of the ages. This design is symbolic but not to the point where symbolism interferes with the simple beauty of the work as architecture.

Seen from the air or from environment, the simple mass becomes a noble elemental feature of the ground in character worthy of the steadfast courage and faith of the great discoverer it commemorates. The cruciform canyon, emitting or receiving light, would be truly impressive from the interior and agreeably cool in a tropical climate. The whole has idea, unity and avoids by a certain rational force the dull craze for altitude and the persistent erection of the "post." This design recognizes the fact that dignity and power of architectural conception is no matter of height. Construction is simple throughout, requiring no elaborate foundations, it may easily be made earthquake proof, and in point of cost is below that of any design submitted. Probably well within programme limit.

The jury gladly and unanimously awards to this competent design by *J. L. Gleave* of *Nottingham, England*, the first prize. And the practical object of the competition has been achieved.

The jury considers one other design worthy serious consideration. The general ground plan is excellent. Santo Domingo itself has been considered in a scheme looking toward the unity of a future development and the monument directly related to that development and to the sea. Its incidental-axis, however, is better major-axis than the one adopted and this informal axis is recommended by the jury to the consideration of the designer placed first.

The sculptural mass of the whole conception does honor to composition.

Placing the tripartite masses of the monument toward the sea as a prow, an inherent symbolism protects and conserves a plaza to the rear upon which faces the tall opening of the dignified memorial chapel which, together with the memorial tablets and sculpture, are made a feature of this

KEEPING A STEP AHEAD *WITH* ENDURO

Buffalo General Electric Bldg., Buffalo, New York; Architects—Bly & Lyman, Buffalo, N. Y. Door Trim of Republic Enduro *fabricated by Machwirth Bros. Co., Buffalo, N. Y. Doors by Dahlstrom Metallic Door Co., Jamestown, N. Y. Etching by C. H. Hanson Co., Chicago, Illinois.*

There is seemingly no limit to the unusual and beautiful effects possible through the use of Republic ENDURO *Nirosta. Many styles of finishes can be supplied from mill and distributor stocks—polished, matte, tampico brush—and etched designs can be supplied by fabricators in the larger cities.* ENDURO *is sold only through Republic Sales Offices and Authorized Distributors.*

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To the designer constantly on the alert for new mediums for the expression of beauty—to the building owner interested in permanence and low upkeep—Republic Enduro, the perfected stainless steel, opens a new realm of possibilities in decoration. You will find this most modern alloy bringing flashing beauty that will never fade to structures of every kind—office buildings, public buildings, hotels, hospitals and homes,—in lobbies, lighting fixtures, furniture and kitchen fitments.

A Republic representative will be glad to suggest some of the many uses for which you can specify this everlasting, ever-lustrous steel—Enduro.

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REPUBLIC'S PERFECTED STAINLESS STEEL

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"ONE OF OUR FINEST SCHOOLS"

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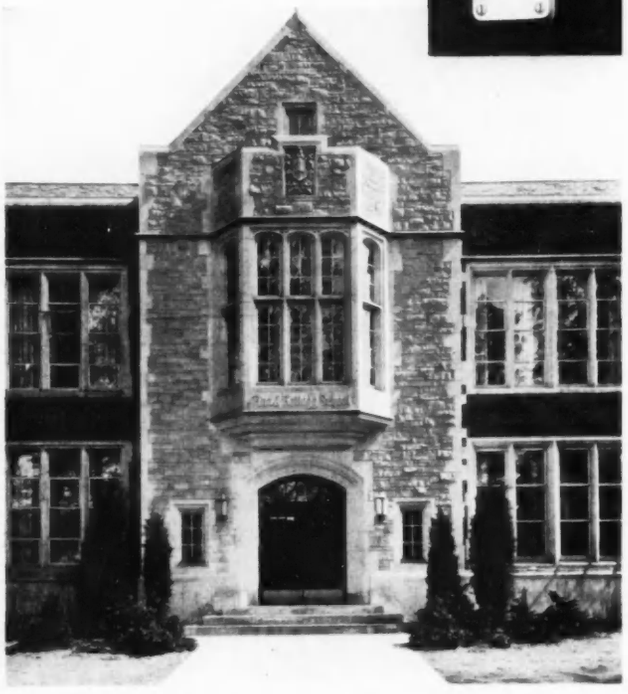
COMPLETELY HARDWARE EQUIPPED BY SARGENT



Beautiful entrance of the recently finished Ann J. Kellogg School in Battle Creek, Michigan; Albert Kahn, Inc., Architects.

MODERN schools are built to serve and endure. They must supply the proper background. And every kind of equipment must be selected to withstand the hardest usage.

The Sargent knob and escutcheon shown gives an idea of the simply designed, sturdy hardware that has been installed in the Ann J. Kellogg School in Battle Creek, Michigan. Other hardware items throughout the great building are of equal simplicity, in perfect harmony with the whole decorative scheme of the structure.

With Sargent Hardware, this fine school, like so many other educational and institutional buildings of the country, will receive a maximum security from every lock and a continued smooth operation from every hardware item. Sargent & Company, New Haven, Conn.; New York; Chicago; Belleville-Sargent & Co., Ltd., Belleville, Ontario, Canada.

SARGENT

LOCKS AND HARDWARE

plaza. The plaza is, unfortunately, without shade. This arrangement is of human interest and value though the great formal mall beyond the plaza is an exaggeration of no value in a tropical climate. The construction of this project probably may be held within programme limits. . . .

Owing to the fact that the placing of the light-tower itself ignores the programme-point at which the tower should stand, the jury might eliminate this design from competition on this minor count. But the jury, finding in the change a suggestion of value worthy of the exception, unanimously awards the second prize to *Donald Nelson* and *Edgar Lynch* of *Paris* and *Chicago*.

Thereafter the work of the jury becomes difficult. No worthy third in line with the qualifications of the first two designs appears. Nor a fourth. Feeling that no decision should ever be given without the reasons assigned for it, the following charterizations are given briefly in outline to indicate why the remaining eight are of a standard below award.

Joaquin Vaquero Palacios; Luis Moya Blanco, Spain. Instead of men, as in the Trojan Horse, the architectural features of this complicated design are concealed within an enormous abstract tripartite monument imprisoning a huge figure of Columbus, incidentally cutting off both his arms. This exaggeration of the human figure serves only to dwarf the monument itself and rob the beholder of any sense of the vastness of the construction. Analyzed and reduced to its elements, this project is the statue set in a park detached from environment, in this case making shift for a lighthouse. Although realizing the conventional idea of a monument, architectural form in this design has absolute divorce from architectural function. The cost of this project would nearly double the programme appropriation. . . .

Theo Lescher, Paul Andrieu, O. Zavaroni, Maurice Gauthier, Paris. This is an eclecticism or imitation of a Mayan temple, depending for impressiveness upon exaggerated size. The arched interior is inconsistent with the trabeated exterior. The whole is so far out of human scale and multiplies so many times (at least ten times) the programme limit of cost as to be utterly regardless. Ignoring this and certain discrepancies of scale within the scheme itself, there is a noble simplicity of mass and a handling of light in the total effect that is praiseworthy. The presentation of this project is magnificent and deserves the consideration mentioned in the final paragraph.

Professor Pippo Medori, Rome. A good ground plan. But the monument itself is pseudo-modern, because it is a form of eclecticism that makes certain arbitrary sharpes by way of taste and assembles them to create a symbolical appearance: in this case, Columbus at the prow of a ship. Without reason certainly. But, unfortunately, without balance or proper integration as the separate arbitrary forms fail to unite. The functions within have no suitable outward expressions. . . .

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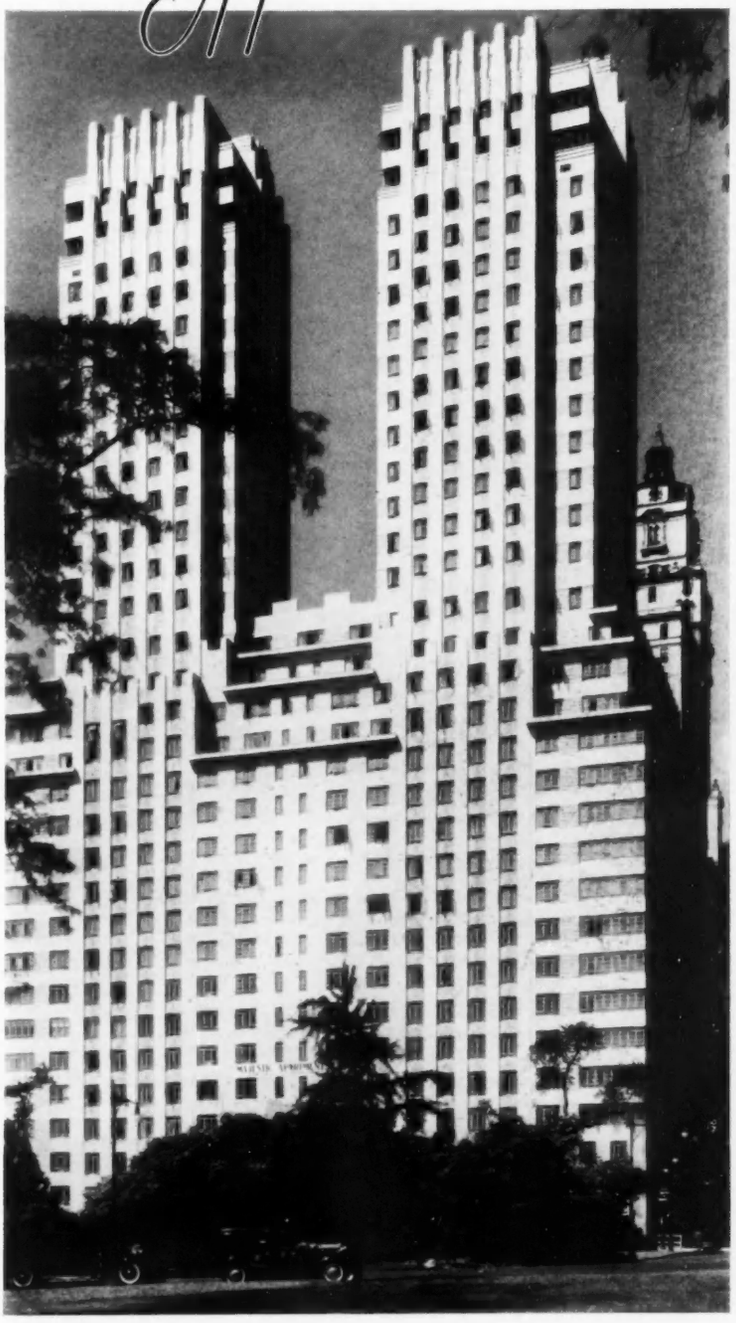

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Corbett, Harrison & MacMurray, Rodgers and Poor, and W. K. Oltar-Jevsky, New York City. Finely rendered scene-painting. The five towers of San Gigminiano telescoped to carry a lantern above features reminiscent of the walls of Sienna and a Roman arcade. The plan, pretty and weak, fails to correlate the several types. The fragment of a boat carrying an effigy of Columbus about to plunge down the rapids represented by the steps is one more exaggeration that begets no greatness. This type of eclecticism expresses no modern thought. This project within programme limits of cost provides only a fragment as a monument. No advance has been made on the preliminary scheme.

Douglas Ellington, Asheville, N. C. A badly over-developed plan wherein an elaborate rosette, by way of a sentimental symbolism of the breaking wave dashing high, rises into a shredded, troubled, disagreeable mass which fails to materialize as architecture—eventuating into no very practical lighthouse. This project has taken no advantage of opportunity to develop.

Josef Wentzler, Dortmund, Germany. An inappropriate, detached tall building with a huge glass lamp on top. Neither in form nor treatment is there sense of proportion or in the undigested scheme any fitness whatsoever to purpose or environment. The presentation itself is falsified by the unfaithful black-rendering often seen in competitions. This project provides within cost limits only a fragment as a monument.

Louis Berthin, Georges Doyon, Georges Nesterof, Paris. This plan proposes a conflict of centers of interest of various types. The monument consists of six huge posts set in a circle for six separate lighthouses. A dramatization of the immortal "Post" in form and plan unsuited to purpose and far outside specified cost limits. A retrogression.

Will Rice Amon, New York City. A bifurcation without reason or suitable symbolism. Extravagant preparation, here, for a figure of Columbus between a pair of gigantic mandibles set as the hub of the huge radiating spokes of a great wheel. Height in this design is a weakness. Clearly an abuse of altitude. The whole outside programme cost limit. This project has not developed beyond the preliminary competition.

Unable to endorse any one of the foregoing eight designs, to dispose of the remaining prizes the jury decides that the Pan American Union make the third award to *Joaquim Vaquero* and *Luis Moya Blanco* of *Spain*: The jury decides that the fourth award be made to *Theo Lescher, Paul Andrieu, O. Zavaroni, Maurice Gauthier, Paris, France.*

(Signed) Eliel Saarinen,
Delegation of the Jury for Europe
(Signed) Frank Lloyd Wright,
Delegation of the Jury for North America
(Signed) Acosta Y. Lara,
Delegation of the Jury for Latin America
Chairman.